2016 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRESS REPORT

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Prepared for



Former Treated Wood Products Facility 2609 South Rangeline Road Joplin, Missouri 64804 EPA I.D. #MOD007129935

Prepared by



Environmental Challenges
BUSINESS SOLUTIONS®

1880 West Oak Parkway Building 100, Suite 106 Marietta, GA 30062 Project No. 02.20000003

February 2017

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Remediation Provided in the control of the con Remediation Program Manager Environment, Health & Safety

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February 28, 2017

Mr. Richard A. Nussbaum Missouri Department of Natural Resources Hazardous Waste Program 1738 East Elm Street (Lower Level) Jefferson City, MO 65101

Re:

2016 Annual Groundwater Monitoring and Corrective Action Progress Report

International Paper Former Treated Wood Products Facility

2609 South Rangeline Road

Joplin, MO 64804 MOD 007129935

Dear Mr. Nussbaum:

International Paper Company (IPCO) is pleased to provide the Missouri Department of Natural Resources (MDNR) with two paper copies and one electronic copy of the 2016 Annual Groundwater Monitoring and Corrective Action Progress Report (AGM/CAP) for the International Paper - Former Treated Wood Products Facility in Joplin, Missouri. The annual reporting requirements are specified in the Missouri Hazardous Waste Management Facility Permit Part I under Special Permit Condition VI.

Do not hesitate to contact Sherri Harvey of EarthCon Consultants, Inc. at (770) 973-2100 or me at (901) 419-4355 if you have any questions or comments.

Sincerely,

CC:

Mike Dandurand, EPA Region 7

Lorenzo Pittsley, International Paper, Joplin, MO

Sherri Harvey, EarthCon

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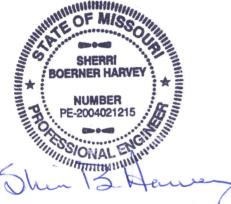
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Certification

"I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by myself or by a subordinate working under my direction."



Sherri B. Harvey, P.E.

MO Registration No. 2004021215

Executive Summary

This report summarizes corrective action and post-closure activities performed January 1 through December 31, 2016 for two closed hazardous waste management units (Landfarms 5 and 7) and the newly-closed Drip Pad and Main Treatment Area at the International Paper Company – former Treated Wood Products facility in Joplin, Missouri. Activities were conducted in accordance with International Paper's Hazardous Waste Management Facility (HWMF) Permit (MOD 007129935) dated September 30, 2013, as modified.

Corrective Action Program (CAP) Monitoring

Groundwater was extracted from three wells with the following objectives: 1) to reduce the concentrations of constituents in groundwater, and 2) to limit off-site migration of groundwater containing these constituents. During 2016, the average groundwater extraction rate was approximately 8.2 gallons per minute (gpm). Extracted groundwater was treated using a filtration system followed by granulated activated carbon. The treated groundwater was discharged to the City of Joplin publicly owned treatment works (POTW). The effluent to the City of Joplin POTW was monitored quarterly during 2016.

Thirteen (13) monitoring wells were sampled September 14 and 15, 2016. Of the 13 groundwater monitoring wells that were sampled during 2016, three wells contained concentrations above the groundwater protection standard (GPS) limits stipulated in the modified HWMF Permit [Missouri Department of Natural Resources (MDNR) 2013], and ten wells had no detected concentrations of site-specific constituents. Evaluation of groundwater elevations and analytical data indicate that the groundwater CAP network continues to be effective in capturing groundwater with concentrations greater than the GPS.

During 2016, the quarterly non-aqueous phase liquid (NAPL) recovery program continued at one monitoring well (J-23.43R) and one sump (Sump-23). In addition, NAPL was removed from the groundwater treatment system's oil/water separator that receives extracted groundwater from recovery wells LSR-8R, LSP-3 and MR-4. In 2016, approximately 163.5 gallons of product were recovered from wells LSR-8R, LSP-3 and MR-4, trace amounts from well J-23.43R, and 7,100 gallons of emulsified product and water were removed from Sump-23.

Stormwater and Sediment Monitoring

Stormwater monitoring for 2016 was performed under the facility's Missouri State Operating Permit (MO-0111325), effective June 16, 2010 as modified January 29, 2014. The State Operating Permit was terminated on September 23, 2016. Stormwater samples were collected monthly (weather permitting) at Outfalls 001 and 002, through August, and analyzed for various organic constituents, zinc and physical parameters. Stormwater analytical data indicated no exceedances of the permit discharge limits with the exception of total recoverable zinc at Outfall #001 in May and June 2016 and at Outfall #002 in July 2016. It is noted that zinc is ubiquitous to the Joplin area, and specifically the International Paper site, which was

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used to mine zinc from the early 1900's until the late 1930's. It is also noted that zinc was not a constituent associated with the former wood treating activities performed at the site.

Annual sediment samples were not analyzed since the State Operating Permit was terminated.

Post-Closure Care Monitoring and Maintenance

Annual subsidence monitoring was performed by a State of Missouri Registered Surveyor at established benchmarks in the Landfarm areas to detect subsidence associated with the possible collapse of underground mine cavities beneath the site. Based on the results of subsidence monitoring, no corrective action was required during the reporting period. In addition, no leakage was detected in the three leachate collection sumps during the annual leachate leak test.

1. Introduction

International Paper is conducting post-closure care activities for three closed hazardous waste management units [Landfarms 5 and 7 and the closed Drip Pad and Main Treatment Area (DP/MTA)] at the former Treated Wood Products facility located in Joplin, Missouri (Figure 1). The Missouri Department of Natural Resources (MDNR) issued a new Missouri Hazardous Waste Management Facility (HWMF) Permit – Part I (No. MOD007129935) on September 30, 2013. Part II of the Permit was issued by the U.S Environmental Protection Agency (EPA) Region 7 on September 30, 2013. Activities performed in 2016 were conducted in accordance with the Permit. This annual report documents compliance with the monitoring requirements of these permits, respectively, for the period of January 1 through December 31, 2016.

1.1 Site Background

From the early 1900s until approximately 1950, underground lead and zinc mining was conducted in and around Joplin, Missouri. Remains of mining activities beneath the site include drifts, rooms, and shafts to depths exceeding 100 feet. Subsidence is currently monitored annually, as stipulated in the modified HWMF Permit.

Property owners prior to International Paper constructed a wood treating plant on the property in 1937. International Paper acquired the site in 1956. Chemicals used in the wood treatment process historically included creosote; a penta solution (diesel and pentachlorophenol mixture) was added during the 1950s. Historically, onsite recovery basins were used for liquid creosote and pentachlorophenol recovery. These basins were taken out of service by the end of 1985. After 1985, the spent wood preservative chemicals were recovered onsite and process wastewater was treated and discharged in accordance with a categorical discharge permit with the City of Joplin (Permit #90–20).

After a period of groundwater monitoring beginning in 1981, a groundwater extraction and treatment system was installed to mitigate historical impacts. Pumping wells were installed in 1990 and the treatment system became operational in 1993. Prior to the July 1998 permit modifications, six groundwater extraction wells and 102 monitoring wells were sampled in accordance with previous permit requirements. As the result of a containment analysis conducted from April 2004 to April 2006, the current groundwater recovery system consists of three wells including LSP-3, LSR-8 (replaced by LSR-8R in 2014) and MR-4.

In 1986, sludge and heavily affected soil from the former recovery basins were removed, processed to recover preservative chemicals, and incinerated offsite. The remaining residual soil was excavated and placed into four Landfarms on the Joplin facility before 1990. Landfarm closure activities began in January 2001. The contents of Landfarms 1 and 4 (including leachate collection equipment and soil drainage layer materials) were transferred and consolidated into a corrective action management unit (CAMU) consisting of Landfarms 5 and 7 and confirmatory soil sampling was performed in the

footprints of Landfarms 1 and 4. In September 2001, Landfarms 1 and 4 were backfilled with clean fill and certified clean closed. Also in September 2001, Landfarms 5 and 7 were covered with geosynthetic liner and concrete caps and certified closed.

On January 26, 2006, International Paper announced the Joplin Treated Wood Products Facility would discontinue manufacturing operations following an evaluation of business conditions. The plant ceased operations on April 30, 2006. International Paper elected to decommission the plant to facilitate potential future industrial use of the property.

Complete information regarding the site history has been previously summarized in numerous documents prepared to support closure of the facility under RCRA regulations (see Section 1.2). A list of these documents is included as Appendix A.

A Consent Agreement and Final Order (CA/FO) was issued by EPA on August 3, 2004. Site characterization was implemented and completed in accordance with the CA/FO which was terminated on January 7, 2014.

1.1.1 RFI (**MDNR**)

At MDNR's request, International Paper submitted to MDNR and EPA a RCRA Facility Investigation (RFI) Report, dated October 6, 2008 that summarized previous soil investigations performed at the Joplin facility. In a letter dated December 4, 2008, MDNR requested that further soil investigations be performed at various locations at the site. To meet MDNR's request, a RFI Workplan was submitted to MDNR and EPA on March 9, 2009 that included soil sampling in 27 locations across the Joplin facility. MDNR conditionally approved the Workplan in a letter dated May 18, 2009. The conditions included the addition of five sampling locations. The RFI Workplan was implemented in July 2009. Analytical results indicated that further investigation at six of the 32 locations was necessary. International Paper submitted an Addendum to the RFI Workplan on October 29, 2009. MDNR approved the Addendum in a letter dated November 13, 2009. The Addendum was implemented in March 2010. Based on the analytical results, additional sampling was conducted to delineate contaminant concentrations in several locations. An addendum to the RFI Workplan was submitted to MDNR and EPA on October 11, 2010 for the collection of 16 additional surface soil samples. MDNR approved the addendum in a letter dated November 15, 2010. The addendum was implemented in March 2011. The results of the three sampling events were submitted to EPA and MDNR in the Supplemental RFI Report, dated August 2, 2011.

MDNR approved International Paper's Supplemental RFI Report dated August 2011 with comments in a letter dated May 5, 2014. Comment No. 2 in MDNR's letter stated that the extent of contamination on the northern portion of the facility has not yet been completely defined. As discussed during a conference call on July 22, 2014 with Rich Nussbaum, Bill Fanska and Nathan Kraus of MDNR, Brian Jones and Dan Davis of International Paper, Mike Dandurand of the EPA, and Carol Northern and Sherri Harvey of EarthCon, additional soil sampling is required to delineate

the northern portion of the International Paper property in Joplin, Missouri. Furthermore, MDNR and EPA indicated that the soil in the northern portion of the property should be delineated using the incremental sampling method (ISM).

To address Comment No. 2, International Paper submitted a draft Surface Soil Sampling Plan on August 15, 2014 as an addendum to the RFI in lieu of the Corrective Measures Study (CMS) Work Plan that was requested in MDNR's May 5, 2014 letter. MDNR's Nathan Kraus responded with comments in an email dated September 12, 2014. On October 21, 2014, Ms. Harvey (EarthCon) sent an email to Mr. Kraus with questions regarding laboratory processing methods of the ISM samples. Mr. Kraus (MDNR) provided direction in an email on November 6, 2014. Based on these comments and conversations with Mr. Dandurand (EPA), the draft Plan was revised and submitted via email to MDNR and EPA on February 9, 2015.

It was determined that a meeting was needed to advance the project. On July 23, 2015, representatives from International Paper, EarthCon, MDNR and EPA (via phone) met at MDNR's office in Jefferson City, MO. During the meeting, MDNR indicated a willingness to accept soil screening levels calculated using a target risk (TR) value other than 10-6 for constituents of concern (COCs) identified during the RFI at the Joplin, Missouri facility. A letter was submitted to MDNR and EPA on September 14, 2015 that included the evaluation of soil concentrations to modified RSL values. The modified industrial 10-4 RSL was used as a "trigger level" to evaluate the need for additional sampling and/or corrective action for the soils at the Joplin facility. Based on the evaluation, no additional assessment or active remedial activities are required for the soils at the Joplin facility. In a letter dated January 8, 2016, MDNR provided approval of the RFI which is comprised of the following:

- 1. RFI Report, dated October 8, 2008
- 2. Supplemental RFI Report, dated August 2, 2011
- 3. RFI Soil Comparison to Modified RSL Values, dated September 14, 2015.

In September 2016, International Paper submitted for MDNR's review, a draft Remedy Proposal Document for the Northern Parcel (55.47 acres) of the facility. The purpose of the Remedy Proposal Document was to summarize the data presented in previous facility reports and demonstrate measures in place that address contaminant impacts in preparation for final closure and removal of the Northern Parcel from the Joplin facility's RCRA Post-Closure Permit. MDNR's comments regarding the draft Remedy Proposal Document are pending.

1.2 Regulatory Background

The Joplin facility was originally subject to RCRA interim status groundwater monitoring in November 1980. International Paper submitted to EPA and the Department a RCRA Permit Application for the surface impoundments on July 29, 1983 (International Paper 1983). On March 17, 1988, International Paper submitted a RCRA Post-Closure Care Permit Application. On

EarthCon Consultants, Inc. February 2017

December 30, 1988, the Department and EPA jointly issued a RCRA Part B Permit and a HSWA Permit to the Joplin facility.

Joplin's RCRA Post-Closure Permit (Part I) and HSWA Permit (Part II) expired on August 22, 2004. An application for a new permit was submitted to the Department and EPA Region 7 on March 8, 2004. On February 17, 2012, International Paper submitted revised Permit Application pages and a response to comments on November 22, 2011 to the Department and EPA. On September 30, 2013, the new Missouri Hazardous Waste Management Facility Permit – Part I was issued by the Department and Part II of the Permit was issued by EPA Region 7.

Closure of the approximately 3-acre DP/MTA at the facility was completed in general accordance with the Closure Plan for the Drip Pad and Main Treatment Area – Revision 3 approved by EPA on March 24, 2014. A Missouri Environmental Covenant (MoECA) for the DP/MTA closed in May 2015 was submitted to EPA and MDNR on November 18, 2015.

2. Groundwater Monitoring

2.1 Introduction

The current groundwater monitoring program is based on the Missouri HWMF Permit – Part I (No. MOD007129935) dated September 30, 2013. The groundwater corrective action program (CAP) consists of a groundwater extraction and monitoring well network. The groundwater extraction system includes wells LSP-3, LSR-8R, and MR-4. Extracted groundwater is treated on site by a granulated activated carbon filtration system and discharged to the City of Joplin's POTW (City of Joplin 1993–present). The groundwater monitoring well network includes wells J-55.22, J-11.119, J-12.28, J-16.46, J-21.59, J-25.40, J-14.30, J-13.37 and J-08.28.

The objectives of the groundwater CAP are to 1) reduce concentrations of site-specific constituents in groundwater, and 2) limit or prevent off-site migration of groundwater that contains these constituents. The location of the groundwater recovery wells and monitoring wells is shown on Figure 2.

Other wells included in the groundwater monitoring program include:

- Well J-52.17R, installed on June 3, 2015, is monitored as part of the DP/MTA closure monitoring program.
- Well J-49.17 serves as the upgradient/background well and is monitored as part of the DP/MTA post-closure care.
- Well J-31.60R serves as a downgradient monitoring well.
- Well J-23.43R is sampled on a voluntary basis if no measurable free product is present.

A summary of groundwater well sampling frequencies as required by the HWMF Permit is provided in Table 1. Well completion data are provided in Table 2.

2.2 Groundwater Extraction and Treatment Operations

The groundwater extraction and treatment system is inspected and maintained in accordance with the requirements of the current HWMF Permit for the Joplin facility.

2.2.1 Groundwater Extraction and Treatment System

The groundwater extraction and treatment system is operated to hydraulically contain and extract affected groundwater and to treat the extracted groundwater to comply with International Paper's Industrial Discharge Permit (#90-20).

Recovered groundwater is transferred to the groundwater treatment system (GWTS), which includes an oil/water separator, followed by two sand filters, a bag filter and then two granulated activated carbon (GAC) vessels in series. In accordance with International Paper's Discharge Permit, the

effluent of the GWTS was sampled for pH, pentachlorophenol (PCP), phenol, oil & grease, biochemical oxygen demand (BOD), total suspended solids (TSS), and total zinc on a quarterly basis. The sampling results of the permitted constituents are summarized in Table 3. The analytical results for the GWTS effluent were below or within the POTW discharge permit limits. The laboratory reports are provided in Appendix B. GWTS Logs, which include pH measurements, are included in Appendix C.

Water samples were collected quarterly between the two GAC vessels to evaluate breakthrough of the lead vessel. In August 2016, breakthrough of the lead vessel was detected. The GWTS was taken off line on October 4 for service and the carbon in both the lead and lag carbon vessels were replaced with new carbon. The spent carbon was properly manifested and disposed of as K001 waste.

2.2.2 Groundwater Recovery

The total volume of treated groundwater discharged to the City of Joplin during 2016 was approximately 4,298,993 gallons. Groundwater extraction rates for pumping wells were measured on a weekly basis. The average extraction rate for 2016 was approximately 8.2 gpm. A high of 12.7 gpm was observed in March and a low of 4.6 gpm was observed in October. Overall, the flow rate for 2016 was slightly higher than 2015 where approximately 3,261,949 gallons of groundwater were recovered. The groundwater extraction rate data and weekly meter readings are provided in Appendix D.

2.3 Groundwater Monitoring Procedures

2.3.1 Well Inspections

The surface and subsurface features of the wells were inspected during the annual well integrity evaluation conducted on September 12, 2016, prior to the annual groundwater sampling event (Appendix E). During 2016, no reportable conditions requiring maintenance or repairs were observed. However, eight flush mounted wells were modified to raise the well pipe to a level inside the vault to improve accessibility to the wells. These wells were resurveyed upon completion of the improvements. Other minor maintenance activities performed in 2016 included replacing well locks and labeling wells as necessary.

The total depth of site wells was measured in 2016 with the exception of the three groundwater recovery wells (LSR-8R, LSP-3 and MR-4) and well MP-4. As shown in Table 4, well depths measured in September 2016 were compared against well depths measured in August 1996 to evaluate whether siltation has occurred. The total depths of three wells (J-14.115, J-26.28 and J-35.39 were re-measured on January 31, 2017 to verify the total well depths. Significant differences between well depth measurements may indicate that siltation is occurring at the bottom of a well. Based on the total depth measurements obtained in September 2016 and January 2017, there are no significant screen obstructions. The total depth data sheet for 2016 is included in Appendix F.

2.3.2 2016 Annual Groundwater Sampling Event

During the 2016 September sampling event, 13 monitoring wells (nine CAP monitoring wells and four additional wells) were sampled in accordance with the HWMF Permit (MDNR 2013). Groundwater samples were collected in general accordance with the procedures specified in the Sampling and Analysis Plan (International Paper 2016). Prior to well purging, groundwater levels were measured with an electronic water-level indicator and recorded on the Groundwater Sampling Records (Appendix F). Historically, well J-23.43R contained NAPL and wasn't sampled. However, NAPL was not detected in September 2016 and J-23.43R was sampled.

During well purging, field measurements of pH, specific conductivity, temperature and turbidity were obtained and recorded on the Groundwater Sampling Records (Appendix F). The cumulative volume of purge water removed from each well was also recorded. The wells were generally sampled when the field measurements stabilized to within 10 percent between consecutive measurements.

The groundwater samples collected from groundwater wells were analyzed for site-specific parameters, as specified in the current HWMF Permit (MDNR 2013). The site-specific analyte list and associated GPS required by the current permit (MDNR 2013) are presented in Table 5. Groundwater samples were analyzed by Pace Analytical Services, Inc. in Lenexa, Kansas.

Results of the groundwater field measurements and laboratory analyses of samples collected are presented in Section 2.4. Field quality assurance and quality control (QA/QC) samples for the sampling event were collected in accordance with requirements specified in EPA SW-846. The QA/QC samples included duplicate samples, and laboratory QA/QC samples, including method blanks and surrogates. Equipment rinsate blanks were not collected as dedicated or disposable equipment was used to perform the sampling.

2.4 Groundwater Monitoring Results

The results of groundwater field measurements and laboratory analyses for 2016 are presented below. The significance of these results is also discussed.

2.4.1 Field Measurements

Pre-extraction groundwater elevations (measured in January 1993) were compared to the 2016 groundwater elevations as shown in Table 6. The pre-extraction potentiometric surface is shown on Figure 3, and the potentiometric surface for September 2016 is presented on Figure 4.

Prior to sampling, stabilized field measurements of pH, temperature, and specific conductivity were obtained from the sampled wells. The field measurements taken during the annual event are generally within the ranges that have been historically measured. Temperature ranged from 18.54 to 24.73° C, pH ranged from 6.1 to 7.8, and specific conductance ranged from 78 to 970 microsiemens /centimeter (µs/cm). Field measurement data for the annual sampling event is provided in Appendix F.

2.4.2 Analytical Results

The QA/QC samples included trip blanks, duplicate samples, MS/MSD samples and laboratory QA/QC, including method blanks and surrogates. The data were validated in accordance with the *Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (EPA 2008). QA/QC sample analyses and data validation for the 2016 September data are included in Appendix G. Based on the data validation, the data were determined to be acceptable and qualification of the data is not required.

Thirteen (13) groundwater monitoring wells were sampled September 14 and 15, 2016. Of the monitoring wells that were sampled, three (J-08.28, J-13.37 and J-23.43R) contained a concentration above the GPS limits stipulated in the modified HWMF Permit (MDNR 2013), and ten wells had no detected concentrations of site-specific constituents. Analytical results for the wells are summarized in Table 7.

Pentachlorophenol was detected above the GPS at concentrations of 1.2 mg/L in the J-08.28 sample and 2.4 mg/L in the J-13.37 sample. Benzothiophene (0.011 mg/L) and 2,3,4,6-tetrachlorophenol (0.14 mg/L) were detected above the reporting limit, but below the GPS in the J-13.37 sample. Several constituents were detected above the GPS in the sample analyzed from J-23.43R, typically known to contain free product. The total concentrations of site-specific constituents for September 2016 are presented on Figures 5, 6 and 7 for the shallow, mine, and limestone groundwater zones, respectively. It should be noted that the data in the center of the plume, wells LSR-8 (LSR-8R), LSP-3 and MR-4, are 2013 data as these wells are no longer included in the annual groundwater sampling program. Groundwater laboratory data are provided in Appendix G.

The relative percent differences (RPDs) were calculated for constituents with detected concentrations for comparison purposes. A RPD provides an indication of how variable the analytical results are between field duplicate samples. If constituents were undetected in one or both samples, RPDs were not calculated. In general, a field duplicate RPD value greater than 30 percent for water samples is an indication of imprecision. The precision of the semi-volatile organic data is acceptable for the September 2016 sampling event. The RPD values of the field duplicates are within the advisory QC limits. The analytical results for field duplicates and data validation summary are provided in Appendix G.

2.5 Summary

The effectiveness of the groundwater CAP is assessed in this section, along with the lateral and vertical extent of site-specific constituents in the groundwater and the extent of hydraulic capture of the groundwater constituent plume. Groundwater flow and constituent trends are evaluated over time.

2.5.1 Evaluation of Groundwater Flow

In-situ slug tests and aquifer tests indicate a wide range of hydraulic conductivities at the site. Average hydraulic conductivity of the shale residuum and limestone residuum were 4.31 x 10⁻⁵ cm/s and 5.89 x 10⁻⁵ cm/s, respectively (MDNR 2002). Average hydraulic conductivity of the Warsaw Formation and associated brecciated zones were estimated at 4.24 x 10⁻³ cm/s and 2.07 x 10⁻³ cm/s, respectively (MDNR 2002). Bedrock groundwater flow directions are generally to the southwest in the southern half of the facility. In the northern portion of the facility, groundwater flow is to the northwest (Exponent 2002).

Natural groundwater flow velocities within the residuum (i.e., unaffected by corrective action controls) were estimated using a modified Darcy's equation. Flow gradients within the residuum, extrapolated from the groundwater elevation contours shown on Figure 3, range from 0.00965 to 0.0424 ft/ft. Calculations using these gradients, the average hydraulic conductivity of 5.1 x 10⁻⁵ cm/sec for shale residuum and limestone residuum, and an estimated effective porosity of 0.30 indicate groundwater velocities in the range of 2 to 7 feet/year (Exponent 2002).

Natural groundwater flow velocities within the Warsaw Formation were estimated using the same flow gradient range and an average hydraulic conductivity of 3.16 x 10⁻³ cm/sec. Using an estimated effective porosity of 0.30, calculated groundwater velocities in the Warsaw Formation range from approximately 105 to 460 feet/year (Exponent 2002).

Since startup of the groundwater CAP in 1993, groundwater extraction has resulted in hydraulic control, as demonstrated on Figure 4. As shown on Figure 4, the direction of groundwater flow is generally consistent with historical observations of groundwater flow direction and hydraulic control is sustained. Pumping rates of the recovery wells are routinely monitored and are increased or decreased as necessary. As illustrated on Figure 4, MR-4 shows the greatest influence on the capture zone.

2.5.2 Evaluation of Plume Stability

Total site-specific constituent concentrations are used to assess the horizontal and vertical extent of dissolved groundwater constituents. These constituents were summed for each well that was sampled during this reporting period. Figures 5, 6, and 7 show the horizontal extent of the site-specific constituent plume as of September 2016, for the shallow, mine, and limestone groundwater zones, respectively. As previously mentioned, the data for wells LSR-8 (LSR-8R), MR-4 and LSP-3 are from the 2013 sampling event. These figures demonstrate that the groundwater CAP continues to be successful in capturing site-specific constituents with concentrations that are greater than GPS limits. Note that the recovery wells that were shut down in April 2004 (LSP-1, LSP-2 and MP-4) are not within the primary site plume as identified by the 1 mg/L total site-specific constituent plume boundary line and monitoring well J-23.43R is a very localized area of detected site-specific constituents located within the capture zone.

Two cross sections showing the vertical extent of site-specific constituents are presented as Figures 8 and 9. These figures demonstrate that concentrations have been vertically delineated and that the highest concentrations of site-specific constituents are within the shallow groundwater at depths of approximately 25–60 ft below ground surface. This depth corresponds roughly with the top of the soil-bedrock interface and the mine workings. However, the exception includes well J-46.110, and J-13.84 which are screened within the upper portion of the fractured limestone.

Trend graphs for select wells with recently detected site-specific constituents (J-08.28 and J-13.37) and edge of plume wells (J-12.28 and J-16.46) are presented on Figure 10. In general, total site-specific constituent concentration trends appear to have decreased or remained stable (relative to historical levels) in the referenced monitoring wells.

Monitoring wells at the perimeter of the site continue to show no detections of site-specific constituents. Therefore, no trend graphs are presented for these wells.

2.5.3 Nonaqueous-Phase Liquid Recovery Program

One groundwater monitoring well, J-23.43R, known to have historical observations of NAPL was monitored in 2016 as part of the routine NAPL monitoring program approved by MDNR. The objectives of the program are to assess the presence of NAPL and to evaluate the feasibility of NAPL extraction from this well. Because LSR-8R and MR-4 are active pumping wells, monitoring within these wells on a routine basis is not practical; therefore, routine NAPL monitoring of these wells along with LSP-3 was based on NAPL recovery at the oil/water separator unit. In accordance with the site Permit (MDNR 2013), the pumps within the active recovery wells are to be pulled at least every two years to measure the amount of product in the wells, if any. The pumps were pulled from these three wells in September 2015. The next NAPL measurements in the active recovery wells will be collected in September 2017 or if a pump is pulled for maintenance, whichever occurs first.

During 2016, less than 1-inch to no NAPL was measured in well J-23.43R. Figure 11 shows the locations of wells where NAPL has been observed historically in comparison to locations of former sources. As shown in Table 8, no measurable amounts of NAPL were recovered from J-23.43R although the well was bailed when NAPL was noted as present in 2016. Approximately 0.5 gallons of NAPL were recovered in 2015. The presence of NAPL is shown on the west-east cross section, Figure 9.

NAPL recovery was also conducted in Sump-23 located approximately 20 feet northeast of J-23.43R (Figure 2). In 2016, approximately 6,450 gallons of emulsified NAPL and groundwater were removed from Sump 23. Approximately 164 gallons of both LNAPL and DNAPL were recovered from the GWTS oil/water separator unit during 2016, which is more than the volume removed in 2015 (97 gallons) but similar to the volume removed in 2014 (162 gallons). Recovered NAPL volumes were recorded on the field forms provided in Appendix H. Recovered NAPL was disposed offsite as a RCRA K001 listed hazardous waste. Recovered groundwater was transferred to the groundwater treatment system.

3. Leachate Recovery

Leachate from Landfarms 5 and 7 is recovered and stored in three tanks on site (Tank 5, Tank 7A, and Tank 7B). The leachate is removed from the tanks on an as-needed basis, typically monthly, and treated at the on-site groundwater treatment facility. The volume of leachate recovered from the three tanks since 2008, is summarized in Table 9. The total volume of leachate recovered annually from each Tank is graphically shown on Figure 12. Prior to 2008, leachate removal volumes were not documented for the Landfarms separately.

Since 2008, the Joplin facility has averaged approximately 12,597 gallons of leachate recovered per year. Approximately 14,590 gallons of leachate were recovered in 2016 which is less than that recovered in 2015 (18,035 gallons).

4. Stormwater Monitoring

4.1 Introduction

The Joplin facility was issued a new Missouri State Operating Permit (MO-0111325), effective January 21, 2005. A renewal permit application was submitted to MDNR on July 27, 2009 in accordance with the permit. International Paper received a revised Operating Permit, dated June 16, 2010. The new permit conditions were implemented during the second semiannual period of 2010. The State Operating Permit was modified on January 29, 2014 to change the required method to analyze for dibenzo(a,h)anthracene.

Closure activities at the site, most recently the closure of the DP/MTA in 2015, are now complete. On December 2, 2015, International Paper submitted a Request to Terminate their State Operating Permit which was approved by MDNR on September 23, 2016. Prior to granting termination of the permit, MDNR requested that International Paper submit an application for a No Exposure Exemption. The application was submitted on July 13, 2016 and approved (No Exposure Certification MONX00507) by MDNR on September 1, 2016.

Stormwater sampling was conducted at the site under the now-expired Operating Permit until September when the permit was terminated. Annual sediment samples were not analyzed since the State Operating Permit was terminated.

4.2 Monitoring Procedures

Monitoring procedures for collecting samples to satisfy requirements in the facility's Operating Permit are presented below. Monitoring procedures include sample locations, monitoring requirements and sampling methods.

4.2.1 Sampling Locations and Associated Monitoring Requirements

Descriptions of stormwater and sediment sampling locations and the associated monitoring requirements for each station are presented below.

Outfall 001

Outfall 001 is located near the western property boundary of the facility in a stormwater conveyance ditch that has been riprapped. Monthly stormwater samples collected at this station, when adequate flow is available, are analyzed for the following parameters:

• Oil and grease, total settleable solids, total phenols, temperature, pH, total recoverable zinc, acenaphthene, dibenzo(a,h)anthracene, indeno[1,2,3-cd]pyrene, phenanthrene, pyrene, PCP, and polychlorinated dibenzo-*p*-dioxins (PCDD).

In addition, the facility's permit requires annual sediment sampling for PCP and PCDD analysis.

Outfall 002

Outfall 002 is located next to the roof water runoff drain for Landfarm 7, near the southern boundary of the International Paper property. The vegetation at the station is routinely cut down to the wetted area. There is some plant material present, primarily smart weed, with other grasses and sedges along the edges. The substrate at this station consists of riprap, small gravel, mud, and detritus. Monthly stormwater samples when adequate flow is available, and annual sediment samples, are collected at this station and analyzed for the same parameters listed for Outfall 001 above.

4.2.2 Sampling Procedures

Stormwater sampling procedures are detailed in the Sampling and Analysis Plan which was updated March 3, 2016 (International Paper, 2016). Prior to sampling, each station was assessed for any visible signs of contamination, such as a sheen on the surface of the water or noticeable odors. Observations were noted in the sampling record. Temperature and pH were measured and recorded at each station prior to sample collection. Surface water sampling records are included in Appendix I.

Sediment samples were collected on September 1, 2016 in general accordance with the procedures detailed in the Sampling and Analysis Plan. Upon receipt of the approval to terminate the State Operating Permit, the laboratory analysis of the samples was cancelled.

4.3 Monitoring Results

The 2010 Operating Permit as modified on January 29, 2014, provides effluent limits for total recoverable zinc (0.168 mg/L), PCP (5.3 ug/L), dibenzo[a,h]anthracene (0.0044 ug/L), oil and grease (15 mg/L), and settleable solids (2.5 mg/L). In addition, on June 16, 2011, the limit for 2,3,7,8-

TCDD of 0.02 pg/L became effective for samples collected at Outfall 001. As a result of the very low permit limits for dibenzo[a,h] anthracene and 2,3,7,8-TCDD, according to the permit, minimum quantification limits of 0.10 ug/L and 4.4 pg/L, respectively, are considered in compliance with the permit limitations. The remaining analytes that do not have permit limits are only subject to monitoring and reporting requirements.

4.3.1 Stormwater Quality

Monthly analytical results for stormwater samples collected through August are presented in Table 10. Stormwater samples were not collected in January or February due to the lack of stormwater flow at the sample stations. The stormwater analytical results for samples collected in 2016 indicate that concentrations were not detected at or above the effective permit numeric discharge limits with the following exceptions:

• The monthly average and daily maximum permit limits for total recoverable zinc (0.084 mg/L and 0.168 mg/L, respectively) were exceeded at Outfall #001 in May and at Outfall #002 in July. The Outfall #001 sample collected in June exceeded the monthly average but not the daily maximum permit limit for total recoverable zinc.

It should be noted that zinc is ubiquitous to the Joplin area, and specifically the International Paper site which was used to mine zinc from the early 1900's until 1956. It should also be noted that zinc was not a constituent associated with the former wood treating activities performed at the site.

A copy of the stormwater analytical and field data and precipitation logs for 2016 is included in Appendix I.

5. Post-Closure Care Monitoring and Maintenance

5.1 Introduction

On November 27, 2013, International Paper submitted a revised Post-Closure Care Plan in accordance with the Missouri HWMF Part I Permit (Schedule of Compliance, Section I.G.) dated September 30, 2013 (International Paper 2013). The Plan was approved by MDNR in a letter, dated January 22, 2014. The Post-Closure Care Plan for the Drip Pad and Main Treatment Area was submitted on April 6, 2015 and was approved by EPA on May 19, 2015.

5.2 Subsidence Monitoring

In accordance with permit Condition IV.B.4., subsidence monitoring is performed on an annual basis in the Landfarm areas at the Joplin facility to detect the possible collapse of underground mine cavities beneath the site. If a net change of more than 0.10 ft is recorded when compared to baseline measurements, corrective action is required, as specified in the HWMF Permit (MDNR 2013). Subsidence monitoring procedures and results are discussed below.

5.2.1 Subsidence Monitoring Procedures and Results

Subsidence monitoring was performed at benchmarks located on the roof supports of the Landfarms on January 16, 2016. Allgeier, Martin & Associates, Inc., a firm that is a State of Missouri Registered Surveyor, performed the subsidence monitoring. Two benchmarks (5–1 and 5–2) were destroyed during the first quarter of 2001 and eight additional benchmarks (1–1, 1–2, 1–3, 1–6, 4–1, 4–2, 4–3, and 7–1) were destroyed during the second quarter of 2001 because of Landfarm redevelopment activities at the facility. In August 2001, three new benchmarks (5–5, 5–7, and 5–9) were established on the roof supports of Landfarm 5.

Monitoring results obtained during the first quarter of 2016 are presented in Appendix J. The net changes recorded are -0.05, -0.04, -0.06, 0.01, 0.0, and -0.02 foot. A net change of more than 0.10 ft was not detected at any of the benchmark locations; therefore, no corrective action was required.

5.2.2 Other Subsidence Observations

No subsidence was observed involving the regulated units on the Joplin facility during the monitoring period or was observed by or reported to International Paper on property adjacent to the Joplin facility during the 2016 monitoring period.

5.3 Leachate Collection Sump Leak Test Results

As required by Special Permit Condition II.A.4 of the modified HWMF Permit, leachate collection sump leak tests were performed by EarthCon site personnel on November 17, 2016. The tests were performed on the three leachate collection sumps at the facility (Sump Nos. 5, 7A, and 7B) according to procedures outlined in the Post-Closure Care Plan for Landfarms 5 and 7 (International Paper

2013). No leakage was detected in any of the three sumps. Results of the testing are provided in Appendix J. The next leachate sump leak tests will be performed in the fourth quarter of 2017.

5.4 Inspection and Maintenance Activities

The perimeter of closed Landfarms 5 and 7 and the collection tanks are inspected on a weekly basis, the Landfarm units are inspected on a quarterly basis, and the closed unit (DP/MTA) is inspected on a semiannual basis. Nothing requiring corrective action was noted during the inspections.

Routine maintenance activities performed for the closed Landfarms 5 and 7 in 2016 included adding sealant to expansion joints of the concrete caps, repairs to Landfarm gutters and the on-going addition of rip rap and soil around downspouts, etc. Leachate was collected and transported from the collection tanks (5, 7A, and 7B) to the groundwater treatment system for treatment and discharge to the City of Joplin POTW in accordance with the Discharge Permit. Routine maintenance performed on the DP/MTA cover in 2016 included the periodic addition of sand to the cover. Other routine maintenance activities in 2016 included resetting of flow meters, electrical repairs, overhauling or replacement of recovery well pumps and motors, replacement of recovery well fittings, mowing and clearing of access roads and well sites. A copy of the completed inspection forms and maintenance activity logs are included in Appendix K.

6. Well Abandonment Activities

With MDNR's October 17, 2016 approval, wells J-01.27R and J-39.18, located on the northern portion of the site were abandoned. These wells were not part of the groundwater monitoring program specified in International Paper's permit and were only used for water level measurements. A copy of the MDNR registration letters confirming these wells were plugged in accordance with Missouri Well Construction rules are provided in Appendix L.

7. Activities Planned for 2017

7.1 Groundwater Monitoring and NAPL Recovery

On November 27, 2013, International Paper submitted a revised Sampling and Analysis Plan in response to the Missouri Hazardous Waste Management Facility Part I Permit (Schedule of Compliance, Section 1.F.) dated September 30, 2013. The Sampling and Analysis Plan (SAP) is a comprehensive replacement for the 2004 Sampling and Analysis Plan and 2013 Groundwater Monitoring Plan previously submitted to MDNR as part of the permitting process. The November 2013 SAP was approved by MDNR in a letter dated, January 22, 2014. The groundwater monitoring and NAPL recovery program was implemented in 2014 in accordance with the 2013 SAP. The 2013 SAP was updated on March 3, 2016 to incorporate the installation and abandonment of wells in accordance with the Permit. The SAP was again updated on January 6, 2017 to incorporate the abandonment of wells J-01.27R and J-39.18, and to remove the stormwater and sediment sampling activities.

The groundwater monitoring wells that will be sampled during annual monitoring in 2017 (scheduled for third quarter) are identified in Tables 1 and 12. Wells will be sampled in order of increasing site-specific constituent concentrations, as determined from the most recently available sampling results. The first wells to be sampled include those considered to be relatively "clean." The remaining wells will be sampled in order of increasing constituent concentrations. Should a well contain NAPL, it will not be sampled. Low-flow groundwater sampling techniques will be used to sample select facility wells during annual monitoring. Groundwater samples will be analyzed for the constituents listed in Table 5.

The NAPL recovery program will continue during 2017. NAPL measurements in monitoring well J-23.43R will be performed quarterly (see Table 1). If NAPL is observed in other monitoring wells, they will be added to the NAPL recovery program. Monthly NAPL monitoring for the GWTS (recovery wells LSR-8R, LSP-3 and MR-4) will continue. NAPL measurements in the active recovery wells will be conducted in 2017 (every odd year).

7.2 Post-Closure Care

Post-closure care monitoring and maintenance activities for closed Landfarms 5 and 7 will be conducted as described in the Post-Closure Care Plan (International Paper 2013). The DP/MTA post-closure care monitoring and maintenance will be conducted as described in the Post-Closure Care Plan for the Drip Pad and Main Treatment Area (International Paper 2015). Annual subsidence monitoring and leachate tank testing will also be performed.

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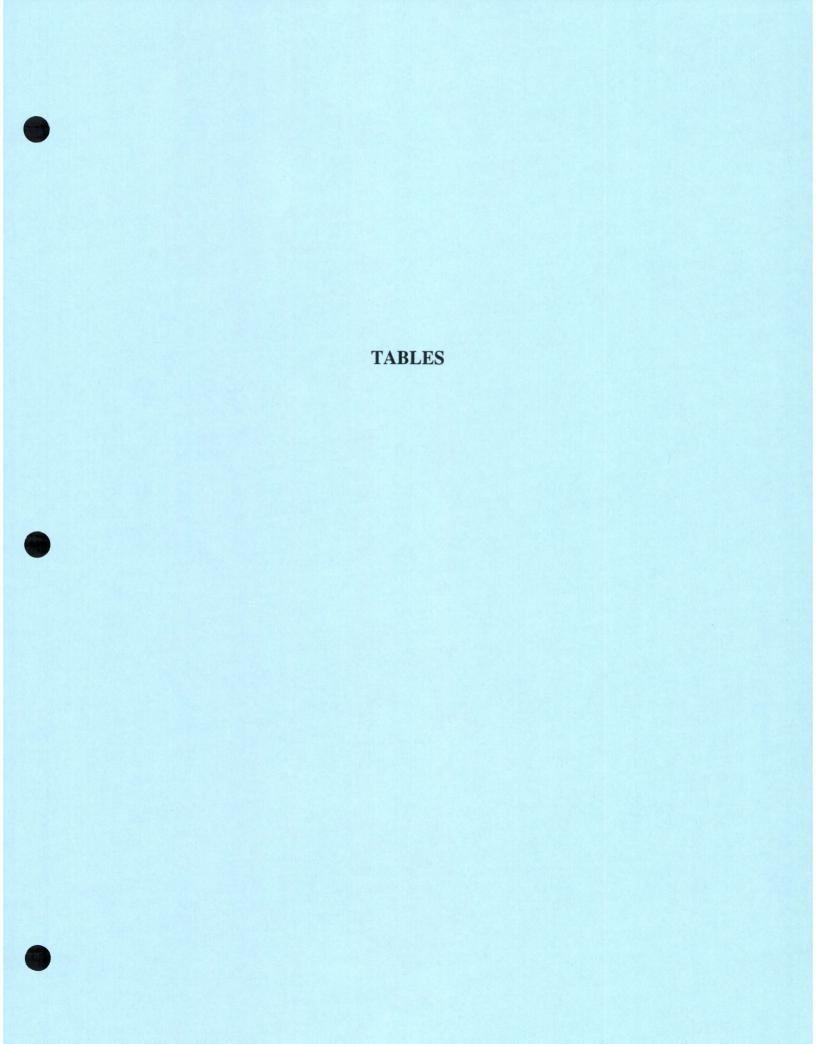


Table 1. Well Classification and Sampling Frequency 2013 Hazardous Waste Management Facility Permit International Paper - Joplin, Missouri

	Annual	Quarterly	Annual	Biennial	Annual	VOCs	PCDDs/PCDFs	
	Water Level	NAPL	NAPL	NAPL	Site-Specific	Every	Every	Appendix IX
Well	Measurements	Measurements	Measurements	Measurements	SVOC Sampling	5 years ^a	5 years ^b	Year 2022 °
J-06.58	Х		Х					
J-08.28	Х		X		Х	Х		
J-08.54	Х	-	X					
J-08.120	Х		Х					
J-11.119	Х		Х		Х	Х		
J-12.28	Х		Х	ļ	Х	Х		
J-13.37	Х		Х		Х	Х		
J-13.65	Х		Х					
J-13.84	Х		Х					
J-13.98	Х		Х					
J-14.30	Х		Х		Х	Х		
J-14.84	Х		Х					
J-14.115	Х		Х					
J-14.160	Х		Х					
J-16.46	. X		Х		Х	X		
J-16.76	Х		Х					
J-21.59	Х		Х		Х	X		
J-23.18	Х		Х			•		
J-23.43R	Х	х			X**			į –
J-23.71	Х		Х					
J-23.107	Х		Х					
J-24.35	Х		Х					
J-25.40	Х		Х		Х	Х		
J-26.28	х	-	Х					
J-31.60R	Х		Х		Х			
J-35.39	Х		Х					
J-46.110	Х		Х					i
J-47.237	х		Х					
J-49.17	Х		Х		Х			<u> </u>
J-52.17R	Х		X		X			
J-55.22	х		X		X	Х		
LSP-1	х		X					
LSP-2	х		Х					
LSP-3*	Х		· · · · · · · · · · · · · · · · · · ·	X				
LSR-6	Х		х	1				
LSR-7	Х		Х					
LSR-8R	Х			Х				
MP-1	Х		х					
MP-2	х		X					
MP-4	Х		X					
MR-1	Х		Х					
MR-3	X		Х					
MR-4	Х			Х				
Totals	43	1	39	3	13	9	6	3

Note:

NAPL - nonaqueous-phase liquid

 $^{^{\}rm a}$ To be performed every 5 years with the next event in 2017.

^b To be collected from 6 wells every 5 years beginning in 2017. Two samples from wells containing low levels of dissolved phase contamination, two samples from wells containing moderate levels of dissolved phase contamination, and two aqueous phase samples from wells demonstrating the presence of free phase contamination. Wells will be determined at the time of sampling.

^c To be collected from three wells, one containing low levels of dissolved phase contamination, one containing moderate levels of dissolved phase contamination and one aqueous phase sample from a well demonstrating free phase-to be determined at the time of sampling.

^{*} NAPL has not been detected in well LSP-3, but is included because the discharge piping for LSP-3 is tied into MR-4 and LSR-8, which do contain NAPL.

^{**} To be sampled on a voluntary basis (not required by permit) if no free product is present.

Table 2. Well Completion Data International Paper Joplin, Missouri

					vation	_									
	Zone	Date of	Date of		Measuring			Bottom		Bottom		f Screen		of Screen	Screen
Well No.	Monitored	Installation	Abandonment		Point	Difference	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Length
J-01.27	SZ	4/24/1983	5/26/2006	1,049.7	1,051.7	1.95	28.0	1,021.7	27	1,022.7	7.0	1,042.7	27.0	1,022.7	20.0
J-01.27R	SZ	5/29/2006	11/14/2016	1,054.2	1,056.7	2.50	30.0	1,024.2	30	1,024.2	10.0	1,044.2	30.0	1,024.2	20.0
J-02.27	SZ	4/24/1983	12/18/1998	1,050.6	1,052.6	1.97	55.0	995.6	27	1,023.6	7.0	1,043.6	27.0	1,023.6	20.0
J-04.22	SZ	4/20/1983	6/29/1999	1,054.2	1,056.3	2.10	46.5	1,007.7	22	1,032.2	7.0	1,047.2	22.0	1,032.2	15.0
J-05.32	SZ	8/27/1981	7/1/1999	1,057.1	1,058.6	1.50	31.5	1,025.6	31.5	1,025.6	21.5	1,035.6	31.5	1,025.6	10.0
J-06.26	SZ	4/19/1983	12/17/1998	1,056.4	1,058.2	1.82	44.0	1,012.4	26	1,030.4	6.0	1,050.4	26.0	1,030.4	20.0
J-06.58	MZ	11/21/1986	NA	1,055.4	1,057.3	1.89	60.6	994.8	58	997.4	48.0	1,007.4	58.0	997.4	10.0
J-07.22	SZ	4/19/1983	12/17/1998	1,044.7	1,046.6	1.93	21.5	1,023.2	21.5	1,023.2	6.5	1,038.2	21.5	1,023.2	15.0
J-08.28	SZ	4/19/1982	NA	1,059.0	1,061.5	2.56	27.5	1,028.5	27.5	1,028.5	7.5	1,048.5	27.5	1,028.5	20.0
J-08.54	MZ	12/6/1986	NA	1,060.2	1,062.7	2.47	55.0	1,002.3	54	1,003.3	44.0	1,013.3	54.0	1,003.3	10.0
J-08.120	LZ	9/4/1987	NA	1,059.5	1,062.0	2.43	120.0	936.9	120	936.9	110.0	946.9	120.0	936.9	10.0
J-08.355	L Z	3/13/1993	8/25/2014	1,056.6	1,059.2	2.59	355.0	701.6	355	701.6	350.0	706.6	355.0	701.6	5.0
J-09.30	SZ	4/20/1983	6/29/1999	1,054.0	1,054.8	0.79	30.5	1,023.5	30	1,024.0	10.0	1,044.0	30.0	1,024.0	20.0
J-11.16	SZ	4/19/1983	6/29/1999	1,052.7	1,054.7	1.97	20.8	1,031.9	16	1,036.7	6.0	1,046.7	16.0	1,036.7	10.0
J-11.119	LZ	11/25/1997	NA	1,052.9	1,055.5	2.58	119.6	933.3	119.4	933.5	109.4	943.5	119.4	933.5	10.0
J-12.28	SZ	8/27/1981	NA	1,052.1	1,053.6	1.45	28.0	1,024.1	28	1,024.1	18.0	1,034.1	28.0	1,024.1	10.0
J-13.11	SZ	4/23/1983	7/28/2014	1,053.6	1,056.7	3.09	11.0	1,042.6	11	1,042.6	6.0	1,047.6	11.0	1,042.6	5.0
J-13.37	SZ	4/22/1983	NA	1,053.7	1,055.8	2.11	64.0	989.7	37	1,016.7	32.0	1,021.7	37.0	1,016.7	5.0
J-13.42	SZ	1/8/1987	7/28/2014	1,052.6	1,054.3	1.73	42.0	1,010.6	42	1,010.6	32.0	1,020.6	42.0	1,010.6	10.0
J-13.65	MZ	1/7/1987	NA	1,053.5	1,055.8	2.33	65.0	988.5	65	988.5	55.0	998.5	65.0	988.5	10.0
J-13.84	LZ	7/6/1990	NA	1,054.0	1,056.2	2.16	85.0	969.0	84	970.0	79.0	975.0	84.0	970.0	5.0
J-13.98	LZ	12/21/1986	NA	1,053.8	1,056.8	3.04	98.0	955.8	98	955.8	88.0	965.8	98.0	955.8	10.0
J-14.30	SZ	9/10/1981	NΑ	1,052.9	1,054.9	2.04	30.0	1,022.9	30	1,022.9	20.0	1,032.9	30.0	1,022.9	10.0
J-14.54	MZ	12/20/1986	6/30/1999	1,053.8	1,056.2	2.36	54.0	999.8	54	999.8	44.0	1,009.8	54.0	999.8	10.0
J-14.84	MZ	1/5/1987	NΑ	1,053.9	1,056.0	2.11	87.0	966.9	84	969.9	74.0	979.9	84.0	969.9	10.0
J-14.115	LZ	12/20/1986	NA	1,053.4	1,056.5	3.11	118.0	935.4	115	938.4	105.0	948.4	115.0	938.4	10.0
J-14.121	LZ	8/29/1987	7/29/2014	1,054.3	1,056.9	2.60	121.0	933.3	121	933.3	111.0	943.3	121.0	933.3	10.0
J-14.160	LZ	8/30/1987	NA	1,054.9	1,057.7	2.78	160.0	894.9	160	894.9	150.0	904.9	160.0	894.9	10.0
J-14.274	LZ	3/4/1993	7/30/2014	1,054.7	1,057.1	2.39	274.4	780.3	274.4	780.3	269.4	785.3	274.4	780.3	5.0
J-15.11	SZ	4/25/1983	6/26/1999	1,051.0	1,053.0	1.95	11.0	1,040.0	11	1,040.0	6.0	1,045.0	11.0	1,040.0	5.0
J-15.44	MZ	4/25/1983	6/29/1999	1,051.0	1,053.0	2.02	44.0	1,007.0	44	1,007.0	39.0	1,012.0	44.0	1,007.0	5.0
J-15.54	MZ	12/9/1986	Abandoned	1,050.3	1,049.9	-0.43	60.0	990.3	54	996.3	44.0	1,006.3	54.0	996.3	10.0
J-15.99	LZ	10/27/1990	6/29/1999	1,051.8	1,054.6	2.81	101.0	950.8	99	952.8	89.0	962.8	99.0	952.8	10.0
J-16.09	SZ	8/2/1984	7/28/2014	1,051.3	1,052.4	1.12	10.5	1,040.8	9	1,042.3	4.0	1,047.3	9.0	1,042.3	5.0
J-16.28	SZ	4/15/1983	7/28/2014	1,051.3		2.01	30.5	1,020.8	28	1,023.3	8.0	1,043.3	28.0	1,023.3	20.0
J-16.46	MZ	12/8/1986	NA	1,050.6	•	2.77	46.0	1,004.6	46	1,004.6	36.0	1,014.6	46.0	1,004.6	10.0
J-16.76	LZ	12/6/1986	NA	1,050.7	1,053.7	3.02	80.0	970.7	76	974.7	66.0	984.7	76.0	974.7	10.0
J-17.26	SZ	4/18/1983	6/30/1999	1,048.5	•	1.98	25.8	1,022.7	25.8	1,022.7	5.8	1,042.7	25.8	1,022.7	20.0
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Table 2. (cont.)

				Ele	vation						······································				
	Zone	Date of	Date of	Ground	Measuring	-	Boring	Bottom	Well	Bottom	Top	of Screen	Bottom	of Screen	Screen
Well No.	Monitored		Abandonment	Surface	Point	Difference	Depth	Elevation	Depth	Elevation	Depth	Elevation	Depth	Elevation	Length
J-19.19	SZ	7/31/1984	6/29/1999	1,049.5	1,051.5	1.97	19.0	1,030.5	19	1,030.5	5.0	1,044.5	19.0	1,030.5	14.0
J-19.38	SZ	8/1/1984	6/29/1999	1,049.8	1,051.6	1.81	40.0	1,009.8	38	1,011.8	23.0	1,026.8	38.0	1,011.8	15.0
J-20.17	SZ	7/30/1984	6/30/1999	1,050.6	1,052.6	1.97	16.5	1,034.1	16.5	1,034.1	5.5	1,045.1	16.5	1,034.1	11.0
J-20.37	SZ	7/31/1984	6/30/1999	1,050.7	1,052.6	1.91	42.0	1,008.7	36.5	1,014.2	21.5	1,029.2	36.5	1,014.2	15.0
J-21.10	SZ	7/29/1984	7/1/1999	1,049.1	1,050.7	1.64	11.5	1,037.6	10	1,039.1	3.0	1,046.1	10.0	1,039.1	7.0
J-21.30	SZ	7/30/1984	7/1/1999	1,049.2	1,050.9	1.72	42.0	1,007.2	30.33	1,018.9	20.3	1,028.9	30.3	1,018.9	10.0
J-21.59	MZ	7/8/1990	NA	1,049.0	1,050.1	1.11	59.5	989.5	58.8	990.2	48.8	1,000.2	58.8	990.2	10.0
J-22.11	SZ	7/28/1984	6/30/1999	1,048.4	1,049.8	1.38	12.0	1,036.4	10.5	1,037.9	3.5	1,044.9	10.5	1,037.9	7.0
J-22.38	SZ	7/28/1984	6/30/1999	1,048.5	1,051.0	2.49	40.0	1,008.5	38	1,010.5	23.0	1,025.5	38.0	1,010.5	15.0
J-23.18	SZ	8/3/1984	NA	1,057.5	1,058.7	1.23	18.0	1,039.5	17.5	1,040.0	3.5	1,054.0	17.5	1,040.0	14.0
J-23.43	SZ	8/3/1984	6/25/2003	1,057.7	1,059.0	1.31	43.0	1,014.7	43	1,014.7	28.0	1,029.7	43.0	1,014.7	15.0
J-23.43R	SZ	6/26/2003	NA	1,058.0	1,059.8	1.80	43.0	1,015.0	43	1,015.0	28.0	1,030.0	43.0	1,015.0	15.0
J-23.71	MZ	11/25/1986	NA	1,057.6	1,059.6	2.03	84.0	973.6	71	986.6	61.0	996.6	71.0	986.6	10.0
J-23.107	LZ	10/15/1990	NA	1,057.7	1,060.1	2.43	154.5	903.2	107	950.7	97.0	960.7	107.0	950.7	10.0
J-23.164	LZ	8/31/1987	7/31/2014	1,057.7	1,060.3	2.60	164.0	893.7	164	893.7	154.0	903.7	164.0	893.7	10.0
J-24.35	SZ	8/6/1985	NA	1,058.9	1,059.1	0.22	36.0	1,022.9	34.7	1,024.2	24.7	1,034.2	34.7	1,024.2	10.0
J-25.40	SZ	8/5/1985	NA	1,048.3	1,048.6	0.32	42.5	1,005.8	40.3	1,008.0	30.3	1,018.0	40.3	1,008.0	10.0
J-26.15	SZ	8/5/1985	6/30/1999	1,047.3	1,049.3	1.97	30.7	1,016.6	15.4	1,031.9	5.4	1,041.9	15.4	1,031.9	10.0
J-26.28	SZ	8/5/1985	NA	1,047.2	1,048.8	1.63	28.7	1,018.5	28.3	1,018.9	18.3	1,028.9	28.3	1,018.9	10.0
J-27.100	LZ	8/2/1985	6/1/2015	1,049.5	1,049.9	0.40	105.5	944.0	100.2	949.3	90.2	959.3	100.2	949.3	10.0
J-28.40	SZ	8/3/1985	6/1/2015	1,049.4	1,050.2	0.80	40.0	1,009.4	40.3	1,009.1	30.3	1,019.1	40.3	1,009.1	10.0
J-29.36	SZ	7/30/1985	6/30/1999	1,047.1	1,047.4	0.28	39.0	1,008.1	36.3	1,010.8	26.3	1,020.8	36.3	1,010.8	10.0
J-30.42	SZ	1/9/1987	10/12/2015	1,045.5	1,047.9	2.41	42.0	1,003.5	42	1,003.5	32.0	1,013.5	42.0	1,003.5	10.0
J-30.100	LZ	1/9/1987	10/12/2015	1,045.3	1,047.3	1.98	100.0	945.3	100	945.3	90.0	955.3	100.0	945.3	10.0
J-31.15	SZ	12/19/1986	6/1/2015	1,046.5	1,046.1	-0.43	15.0	1,031.5	15	1,031.5	5.0	1,041.5	15.0	1,031.5	10.0
J-31.40	MZ	12/19/1986	6/1/2015	1,046.6	1,045.5	-1.14	41.0	1,005.6	40	1,006.6	30.0	1,016.6	40.0	1,006.6	10.0
J-31.60	MZ	12/6/1986	6/1/2015	1,046.5	1,046.0	-0.50	80.0	966.5	60	986.5	50.0	996.5	60.0	986.5	10.0
J-31.60R	MZ	8/28/2014	NA	1,047.6	1,050.3	2.70	66.0	981.6	66	981.6	56.0	991.6	66.0	981.6	10.0
J-32.70	MZ	12/10/1986	7/28/2014	1,050.0	1,052.3	2.32	80.0	970.0	70	980.0	60.0	990.0	70.0	980.0	10.0
J-33.40	SZ	12/8/1986	7/1/1999	1,055.8	1,058.1	2.30	42.0	1,013.8	40	1,015.8	30.0	1,025.8	40.0	1,015.8	10.0
J-34.30	SZ	1/8/1987	6/30/1999	1,057.5	1,059.6	2.09	32.0	1,025.5	30	1,027.5	20.0	1,037.5	30.0	1,027.5	10.0
J-35.39	SZ	11/20/1986	NA	1,056.0	1,058.4	2.38	40.0	1,016.0	39	1,017.0	29.0	1,027.0	39.0	1,017.0	10.0
J-36.18	SZ	1/11/1987	12/18/1998	1,038.9	1,041.4	2.52	18.0	1,020.9	18	1,020.9	8.0	1,030.9	18.0	1,020.9	10.0
J-37.18	SZ	1/11/1987	12/17/1998	1,039.4	1,042.4	2.99	18.0	1,021.4	18	1,021.4	8.0	1,031.4	18.0	1,021.4	10.0
J-38.18	SZ	1/13/1987	12/18/1998	1,054.5	1,053.6	-0.86	18.0	1,036.5	18	1,036.5	8.0	1,046.5	18.0	1,036.5	10.0
J-39.18	SZ	1/12/1987	11/14/2016	1,055.3	1,057.4	2.14	18.0	1,037.3	18	1,037.3	8.0	1,047.3	18.0	1,037.3	10.0
J-40.18	SZ	1/13/1987	12/18/1998	1,045.4	1,044.9	-0.50	18.0	1,027.4	18	1,027.4	8.0	1,037.4	18.0	1,027.4	10.0
J-41.18	SZ	1/12/1987	12/17/1998	1,048.5	1,050.6	2.10	18.0	1,030.5	18	1,030.5	8.0	1,040.5	18.0	1,030.5	10.0
J-42.18	SZ	1/14/1987	12/18/1998	1,057.4	1,056.9	-0.55	18.0	1,039.4	18	1,039.4	8.0	1,049.4	18.0	1,039.4	10.0
J-43.18	SZ	1/14/1987	7/1/1999	1,057.9	1,060.0	2.12	18.0	1,039.9	18	1,039.9	8.0	1,049.9	18.0	1,039.9	10.0

Table 2. (cont.)

					vation								5		0
	Zone	Date of	Date of		Measuring			Bottom		Bottom		f Screen		of Screen	Screen
Well No.	Monitored	Installation			Point	Difference	Depth	Elevation	Depth	Elevation		Elevation	Depth	Elevation	Length
J-44.18	SZ	1/12/1987	12/18/1998	1,053.3	1,055.0	1.67	18.0	1,035.3	18	1,035.3	8.0	1,045.3	18.0	1,035.3	10.0 10.0
J-45.61	MZ	8/26/1987	12/17/1998	1,051.9	1,054.4	2.47	67.5	984.4	61	990.9	51.0	1,000.9	61.0	990.9	16.0
J-46.110	ĹŹ	6/28/1990	NA	1,057.0	1,059.6	2.61	112.0	945.0	110	947.0	94.0	963.0	110.0	947.0	
J-46.268	LZ	12/18/1992	7/31/2014	1,057.5	1,060.2	2.66	268.0	789.5	268	789.5	263.0	794.5	268.0	789.5	5.0
J-47.95	MZ	9/3/1990	7/28/2014	1,050.0	1,052.3	2.28	127.0	923.0	95.1	954.9	74.9	975.1	95.1	954.9	20.2
J-47.237	LZ	3/4/1993	NA	1,050.5	1,053.1	2.64	237.0	813.5	237	813.5	232.0	818.5	237.0	813.5	5.0
J-48.15	SZ	9/4/1992	6/29/1999	1,054.0	1,058.4	4.43	21.5	1,032.5	15	1,039.0	5.5	1,048.5	14.5	1,039.5	9.0
J-49.17	SZ	9/4/1992	NA	1,052.0	1,051.6	-0.36	20.5	1,031.5	17	1,035.0	7.5	1,044.5	16.5	1,035.5	9.0
J-50.15	SZ	9/1/1992	6/29/1999	1,053.0	1,052.0	-0.98	17.0	1,036.0	14	1,039.0	4.5	1,048.5	13.5	1,039.5	9.0
J-51.17	SZ	8/31/1992	6/29/1999	1,055.0	1,054.2	-0.76	44.0	1,011.0	17.5	1,037.5	8.0	1,047.0	17.0	1,038.0	9.0
J-52.17	SZ	9/9/1992	7/28/2014	1,056.0	1,055.1	-0.93	20.0	1,036.0	17	1,039.0	7.5	1,048.5	16.5	1,039.5	9.0
J-52.17R	SZ	6/3/2015	NA	1,057.2	1,059.8	2.61	20.0	1,036.0	20	1,039.0	10.0	1,048.5	20.0	1,039.5	10.0
J-53.17	SZ	9/10/1992	6/29/1999	1,057.0	1,056.3	-0.75	23.0	1,034.0	17	1,040.0	7.5	1,049.5	16.5	1,040.5	9.0
J-54.23	SZ	9/8/1992	6/29/1999	1,057.0	1,056.8	-0.22	25.0	1,032.0	23	1,034.0	13.5	1,043.5	22.5	1,034.5	9.0
J-55.22	SZ	8/31/1992	NA	1,057.0	1,058.7	1.73	26.0	1,031.0	22.5	1,034.5	13.0	1,044.0	22.0	1,035.0	9.0
J-56.21	SZ	9/1/1992	7/1/1999	1,058.0	1,058.0	-0.03	25.5	1,032.5	22.5	1,035.5	13.0	1,045.0	22.0	1,036.0	9.0
J-57.23	SZ	9/1/1992	12/17/1998	1,053.0	1,056.7	3.67	24.0	1,029.0	22.5	1,030.5	13.0	1,040.0	22.0	1,031.0	9.0
J-58.15	SZ	8/27/1992	12/18/1998	1,058.0	1,059.8	1.82	17.0	1,041.0	15	1,043.0	5.5	1,052.5	14.5	1,043.5	9.0
J-59.17	SZ	8/25/1992	12/18/1998	1,056.0	1,059.9	3.90	17.5	1,038.5	17	1,039.0	7.5	1,048.5	16.5	1,039.5	9.0
LSP-1	MZ	7/29/1990	NA	1,058.4	1,058.8	0.42	76.5	981.9	75.2	983.2	45.2	1,013.2	75.2	983.2	30.0
LSP-2	MZ	7/16/1990	NA	1,058.7	1,059.5	0.76	112.0	946.7	108.8	949.9	78.8	979.9	108.8	949.9	30.0
LSP-3	MZ	7/25/1990	NA	1,055.3	1,053.8	-1.52	65.0	990.3	62.5	992.8	42.5	1,012.8	62.5	992.8	20.0
LSR-1	MZ	8/30/1990	6/2/2015	1,057.0	1,055.4	-1.58	50.0	1,007.0	49.5	1,007.5	29.5	1,027.5	49.5	1,007.5	20.0
LSR-2	MZ	8/19/1990	6/2/2015	1,058.0	1,056.2	-1.78	110.3	947.7	110	948.0	80.0	978.0	110.0	948.0	30.0
LSR-3	SZ	7/24/1990	7/29/2014	1,059.5	1,057.7	-1.80	45.0	1,014.5	44.8	1,014.7	24.8	1,034.7	44.8	1,014.7	20.0
LSR-5	MZ	7/19/1990	7/29/2014	1,055.3	1,053.4	-1.87	65.0	990.3	65	990.3	55.0	1,000.3	65.0	990.3	10.0
LSR-6	MZ	7/11/1990	NA	1,054.0	1,053.9	-0.13	105.0	949.0	96.9	957.1	86.9	967.1	96.9	957.1	10.0
LSR-7	MZ	8/20/1990	NA	1,058.2	1,057.9	-0.26	50.0	1,008.2	48.6	1,009.6	28.7	1,029.5	48.6	1,009.6	19.9
LSR-8	MZ	8/3/1990	8/25/2014	1,057.0	1,055.3	-1.71	65.0	992.0	64.3	992.7	34.3	1,022.7	64.3	992.7	30.0
LSR-8R	MZ	8/27/2014	NA	1,057.1	1,055.8	-1.30	70.0	987.1	70	987.1	40.0	1,017.1	70.0	987.1	30.0
MP-1	MZ	11/1/1990	NA	1,050.7	1,051.1	0.38	125.0	925.7			100.0	950.7	114.5	936.2	14.5
MP-2	MZ	7/18/1990	NA	1,049.2	1,049.6	0.36	86.0	963.2	79.8	969.4	50.5	998.7	79.8	969.4	29.3
MP-4	MZ	8/7/1990	NA	1,056.4	1,054.5	-1.89	63.0	993.4	60	996.4	40.2	1,016.2	60.0	996.4	19.8
MR-1	MZ	9/14/1990	NA	1,050.3	1,050.7	0.41	51.0	999.3							
MR-2			NA	1,051.9	1,051.5	-0.35	55.6	996.3							
MR-3	MZ	9/18/1990	NA	1,053.3	1,053.6	0.25	90.0	963.3	60.2	993.1	40.1	1,013.2	60.2	993.1	20.1
MR-4	MZ	10/5/1990	NA	1,054.8	1,054.0	-0.77	65.0	989.8	64.2	990.6	27.5	1,027.3	64.2	990.6	36.7

Source: ENSR (1996) and Allgeier (2003 and 2015).

Note: Elevations reported in feet above mean sea level, depths reported in feet below ground surface, and screen lengths reported in feet.

- information not available

LZ - limestone zone below mine level NA - information not applicable

MZ - mine zone and connected limestone/shale SZ - residual soil zone

Table 3. Summary of GWTS Effluent Testing for Permitted Constituents
International Paper
Joplin, Missouri

Date	Pentachlorophenol	Phenol	Oil & Grease	Total Zinc	BOD ₅	pH (std. units)	TSS
15-Feb-16	0.010 U	0.010 U	5.0 U	0.06	17.4	6.48	52.0
12-May-16	0.011 U	0.011 U	5.0 U	0.050 U	15.6	6.46	53.3
31-Aug-16	0.017	0.034	5.0 U	0.050 U	10.2	6.55	25.0
29-Nov-16	0.010 U	0.010 U	5.0 U	0.23	11.2	6.51	42.0
Permit Levels	0.43	10	100	3.2		6 - 9	

Note: Unless noted, concentrations reported as mg/L.

-- - Not applicable

U - Not detected at specified detection limit

BOD₅ - biochemical oxygen demand

TSS - total suspended solids

GWTS - groundwater treatment system

Carbon change out: October 2016

Prepared By:AGL 1/26/17 Check By: KMD 1/27/17

Table 4. Evaluation of Well Bottom Depths International Paper Joplin, Missouri

				Screen
	Depth Measurements		Depth	Obstruction
Well No.	1996	Sep-16	Change	(percent)
J-06.58	56.91	56.85	0.06	0.6%
J-08.28	26.82	25.57	1.25	6.25%
J-08.54	54.09	53.69	0.40	4.0%
J-08.120	120.41	119.80	0.61	6.1%
J-11.119	119.60	119.36	0.24	2.4%
J-12.28	26.05	26.03	0.02	0.2%
J-13.37	34.66	34.67	-0.01	-0.2%
J-13.65	65.32	66.33	-1.01	-10.1%
J-13.84	81.66	81.74	-0.08	-1.6%
J-13.98	98.23	98.56	-0.33	-3.3%
J-14.30	30.30	30.29	0.01	0.1%
J-14.84	83.87	83.79	0.08	0.8%
J-14.115	112.72	112.78 *	-0.06	-0.6%
J-14.160	159.80	160.00	-0.20	-2.0%
J-16.46	46.32	46.33	-0.01	-0.1%
J-16.76	75.93	75.57	0.36	3.6%
J-21.59	60.67	60.68	-0.01	-0.1%
J-23.18	18.22	18.31	-0.09	-0.6%
J-23.43R	43.81 ^a	43.81	0.00	0.0%
J-23.71	70.53	70.51	0.02	0.2%
J-23.107	107.33	107.06	0.27	1.8%
J-24.35	35.11	35.18	-0.07	-0.7%
J-25.40	40.84	40.74	0.10	1.0%
J-26.28	28.80	28.89 *	-0.09	-0.9%
J-31.60R	NA	68.87	0.00	0.0%
J-35.39	39.35	39.52 *	-0.17	-1.7%
J-46.110	110.52	110.51	0.01	0.1%
J-47.237	236.66	236.67	-0.01	-0.2%
J-49.17	17.32	17.19	0.13	1.4%
J-52.17R	19.60 ^b	19.66	-0.06	-0.6%
J-55.22	23.00	23.14	-0.14	-1.6%

Note: Depths reported in feet below ground surface, and depth change reported in feet. Screen lengths are provided in Table 2. Obstruction percentages greater than 10 percent (positive) are bolded.

NM - not measured

Prepared By: KAH 9/28/2016 Checked By: KMD 12/6/16

a - Measured November 2003 after installation.

b- Measured September 2015 after installation.

^{*} Re-measured on January 31, 2017.

Table 5. Groundwater Analyte List and Associated GPS International Paper
Joplin, Missouri

	GPS
Analyte	(mg/L)
Semivolatile Organic Compounds	
1-Methylnaphthalene	0.00097
2,3,4,6-Tetrachlorophenol	0.17
2,4,5-Trichlorophenol	0.89
2,4,6-Trichlorophenol	0.0035
2,4-Dichlorophenol	0.035
2,4-Dimethylphenol	0.27
2,4-Dinitrophenol	0.03
2,4-Dinitrotoluene	0.00113
2,6-Dinitrotoluene	0.00093
2-Chlorophenol	0.071
2-Methylnaphthalene	0.027
4,6-Dinitro-o-cresol	0.0012
Acenaphthene	0.4
Acenaphthylene	0.17
Anthracene	9.6
Benz[a]anthracene	0.0009
Benzo[a]pyrene	0.0002
Benzo[b]fluoranthene	0.00146
Benzo[ghi]perylene	0.0264
Benzo[j]fluoranthene	0.01
Benzo[k]fluoranthene	0.00072
Benzothiophene	n/a
Carbazole	0.0264
Chrysene	0.005
Cresol (m-)	0.72
Cresols (o-)	0.72
Cresols (p-)	1,4
Dibenz[a,h]anthracene	0.00152
Dibenzofuran	0.00567
Fluoranthene	0.3
Fluorene	1.3
Indeno[1,2,3-cd]pyrene	0.005
Naphthalene	0.02
p-Chloro-m-cresol	1.1
Pentachlorophenol	0.00167
Phenanthrene	0.075
Phenol	0.3
Pyrene	0.96

Note: Current CAP monitoring became effective on September 30, 2013 (after the 2013 annual sampling event). GPS - groundwater protection standard

n/a - not applicable, no GPS

Prepared By: KMD 2/4/2014 Checked By: AGL 1/19/2015

Table 6. Summary of Groundwater Elevations
International Paper
Joplin, Missouri

	1993 Pre-	September 12, 2016
	Extraction	Groundwater
Well No.	Elevation	Elevation
J-01.27R	not installed	1047.27
J-06.58	1043.87	1041.67
J-08.28	1046.08	1043.47
J-08.54	1043.46	1043.51
J-08.120	1043.46	1043.24
J-11.119	not installed	1042.55
J-12.28	1044.57	1044.05
J-13.37	1043.23	1043.40
J-13.65	1043.14	1043.27
J-13.84	1043.14	1043.52
J-13.94 J-13.98	1043.13	1043.12
J-13.96 J-14.30	1045.16	1043.12
J-14.84	1043.10	1043.07
J-14.115	1043.10	1044.59
J-14.160	1043.11	1043.15
J-16.46	1043.07	1043.26
J-16.76	1043.07	1042.76
J-21.59	1043.13	1041.86
J-23.18	1053.97	1051.58
J-23.43R	not installed	1049.09
J-23.71	1043.25	1042.72
J-23.107	1043.34	1043.20
J-24.35	1050.12	1044.73
J-25.40	1044.33	1044.75
J-26.28	1042.56	1042.39
J-31.60R	not installed	1043.75
J-35.39	1044.87	1046.09
J-39.18	1051.39	1048.99
J-46.110	1043.26	1043.05
J-47.237	not installed	1043.17
J-49.17	1048.64	1045.61
J-52.17R	not installed	1043.79
J-55.22	1042.14	1045.81
LSR-6	1043.64	1041.70
LSR-7	1046.50	1041.80
LSR-8R	not installed	1040.85
MR-1	1043.54	1041.83
MR-3	1043.72	1042.15
MR-4	1044.33	1035.11
LSP-1	1044.48	1041.38
LSP-2	1043.69	1040.90
LSP-3	1044.18	1038.37
MP-1	1043.23	1039.05
MP-2	1043.30	1041.17
MP-4	1043.64	1042.26

Note:

Elevations reported in feet above mean sea level (MSL). not installed - Not installed prior to 1993 pre-extraction water level data.

Prepared By: KAH 9/28/2016 Checked By: KMD 12/6/16

Table 7. Summary of Groundwater Analytical Results International Paper Joplin, Missouri

		J-08.28	J-11.119	J-12.28	J-13.37	J-14.30	J-16.46	J-21.59	J-23.43R	J-25.40	J-31.60R	J-49.17	J-52.17R	J-55.22
		SZ	LZ	SZ	SZ	SZ	MZ	MZ	SZ	SZ	MZ	SZ	SZ	SZ
Parameter, mg/L	GPS	09/15/16	09/14/16	09/14/16	09/15/16	09/14/16	09/15/16	09/14/16	09/15/16	9/14/16	09/14/16	09/14/16	09/14/16	09/15/16
Acenaphthene	0.4	0.01 U	0.20	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Acenaphthylene	0.17	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Anthracene	9.6	0.01 U	0.022	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Benz[a]anthracene	0.0009	0.01 U	0.012	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Benzo[a]pyrene	0.0002	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Benzo[b]fluoranthene	0.00146	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Benzo[ghi]perylene	0.0264	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Benzo[j]fluoranthene	0.01	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Benzo[k]fluoranthene	0.00072	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Benzothiophene	n/a	0.01 U	0.01 U	0.01 U	0.011	0.01 U	0.01 U	0.01 U	0.14	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Carbazole	0.0264	0.01 U	0.043	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
4-Chloro-3-methylphenol	0.02*	0.02 U	0.20 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U				
2-Chlorophenol	0.071	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Chrysene	0.005	0.01 U	0.012	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Dibenz[a,h]anthracene	0.00152	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Dibenzofuran	0.00567	0.01 U	0.088	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
2,4-Dichlorophenol	0.035	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
2,4-Dimethylphenol	0.27	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
4,6-Dinitro-2-methylphenol	0.05*	0.05 U	0.50 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U				
2,4-Dinitrophenol	0.03	0.05 U	0.50 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U				
2,4-Dinitrotoluene	0.00113	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
2,6-Dinitrotoluene	0.00093	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Fluoranthene	0.3	0.01 U	0.088	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Fluorene	1.3	0.01 U	0.13	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Indeno[1,2,3-cd]pyrene	0.005	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
1-Methylnaphthalene	0.00097	0.01 U	0.12	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
2-Methylnaphthalene	0.027	0.01 U	0.16	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
2-Methylphenol (o-cresol)	0.72	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
3&4-Methylphenol (m&p-cresol)	1.1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Naphthalene	0.02	0.01 U	1.9	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Pentachlorophenol	0.00167	1.2	0.01 U	0.01 U	2.4	0.01 U	0.01 U	0.01 U	1.1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Phenanthrene	0.075	0.01 U	0.22	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
Phenol	0.3	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Pyrene	0.96	0.01 U	0.059	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U						
2,3,4,6-Tetrachlorophenol	0.17	0.02 U	0.02 U	0.02 U	0.14	0.02 U	0.02 U	0.02 U	0.053	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
2,4,5-Trichlorophenol	0.89	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
2,4,6-Trichlorophenol	0.0035	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U							
Total Concentration		1.2	0.00	0.00	2.55	0.00	0.00	0.00	4.35	0.00	0.00	0.00	0.00	0.00

NS Not Sampled

GPS exceedances are in bold.

SZ -Shallow Zone

MZ -Mine zone

Total concentration = Sum of detected concentration values

GPS - groundwater protection standard as specified in the September 30, 2013 Missouri Hazardous Waste Management Facility Permit- Part I

U - not detected at or above the detection limit

NS - not sampled

^{*} GPS from 1994 Permit

Table 8. Summary of 2016 NAPL Measurements International Paper Joplin, Missouri

				Well N	lumber		
Date		J-23.43R		LSR-8R, MR-4, & LSP-3*		Sump-2	23**
Jan-16	L/D	trace	L	13.0 gal. product removed	L/D	750	gal. emulsified water/product removed
Feb-16	L/D	trace	L	13.0 gal. product removed	L/D	600	gal. emulsified water/product removed
Mar-16	L/D	trace	L	13.0 gal. product removed	L/D	800	gal. emulsified water/product removed
Apr-16	L/D	trace	L	4.0 gal. product removed			
Мау-16	L/D	trace	L	3.0 gal. product removed			
Jun-16	L/D	trace	L	5.0 gal. product removed	L/D	600	gal. emulsified water/product removed
Jul-16	L/D	trace	L	10.5 gal. product removed	L/D	650	gal. emulsified water/product removed
Aug-16	L/D	trace	D	97.0 gal. product removed	L/D	600	gal. emulsified water/product removed
Sep-16		0	L	5.0 gal. product removed	L/D	600	gal. emulsified water/product removed
Oct-16		0		0.0 gal. product removed	L/D	600	gal. emulsified water/product removed
Nov-16		0		0.0 gal. product removed	L/D	650	gal. emulsified water/product removed
Dec-16		0		0.0 gal. product removed	L/D	600	gal. emulsified water/product removed

Total NAPL Removed (gal)

163.5

Note: This table contains information only for those wells with historical or current NAPL observations.

gal - gallons

-- - not evaluated

D - dense nonaqueous-phase liquidL - light nonaqueous-phase liquid

NAPL - nonaqueous-phase liquid

trace - NAPL present but not in measurable quantities

Prepared By: RJA 1/26/2017 Checked By: AGL 2/2/2017

^{*} Wells LSR-8, MR-4 & LSP-3 are active groundwater extraction wells pumped to an oil/water separator. The amount of product removed is shown as a combined measurement. Note, that product has not been observed in LSP-3.

^{**} Sump 23 is pumped on a voluntary basis.

Table 9. Summary of Leachate Recovery International Paper Joplin, Missouri

[2008						
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	525		1,400	1,925	1,725	950	800	800	1,575	1,175	1,600	475	12,950
Tank 7A	-		250	-			*		375	-	-	325	950
Tank 7B	375	625	1,700	1,925	1,200	850	450	625	1,275	800	400	350	10,575
Total			_	_									
(Gallons)	900	625	3,350	3,850	2,925	1,800	1,250	1,425	3,225	1,975	2,000	1,150	24,475

							2009						
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	300	400	400	-	1,550	-	1,050	1,450	-	1,225	-	-	6,375
Tank 7A	100	-	-	11 12	-	-	225	-	-	-	-	-	325
Tank 7B	500	550	650	-	1,100		900	950		650	-		5,300
Total													
(Gallons)	900	950	1,050	-	2,650	-	2,175	2,400	-	1,875	-	-	12,000

	1.00						2010						
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	-	400	1,175		15	1,200	-	1,200	1,800	-	1,100	-	6,875
Tank 7A	-	-	-		-	800	-	375		-	400		1,575
Tank 7B	-	950	-	-		1,450	-	1,450		-	1,200		5,050
Total (Gallons)	-	1,350	1,175		-	3,450		3,025	1,800	-	2,700		13,500

	2011												
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	-	950	-	1,150	-	1,200	21 -	-	-	-	2,725	-	6,025
Tank 7A	-		~	775	-	300	-	-	-	-	775	-	1,850
Tank 7B	-	650	-	1,400	-	1,600	-	-	-	-	1,375	-	5,025
Total													
(Gallons)	-	1,600	-	3,325	-	3,100	-	-	-	-	4,875	-	12,900

	2012													
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Tank 5	-	-	500		350	-		-	-	1,150	-	-	2,000	
Tank 7A		-	200	-	400	-	-	-	-	450	-	(-)	1,050	
Tank 7B	-	-	800	-	975		-		-	1,150	-	-	2,925	
Total										=				
(Gallons)		-	1,500	-	1,725	-	=	-	-	2,750	-		5,975	

		2013													
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total		
Tank 5	-	-	-	-	-	1,850	L" w	-	-	-	1,500	-	3,350		
Tank 7A	-	-	-		-	-	-	1-	-	-	-	-			
Tank 7B	-	-	-	:=		1,600		-		-	-	121	1,600		
Total															
(Gallons)	-	-	-	-	-	3,450	-	-	_	-	1,500		4.950		

							2014						
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	1,750		1,200	-	1,200		800		175	-	500	680	6,305
Tank 7A		-		-	400			14"	-		-	-	400
Tank 7B	1,800		1,200	-	1,200	-	800	-	1,350	-	575	750	7,675
Total	_												
(Gallons)	3,550	-	2,400		2,800	-	1,600	-	1,525	= .	1,075	1,430	14,380

	2015												
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	650	575	575	625	1,425	1,200	575	500	560		800	750	8,235
Tank 7A	250	-	-	250	400	350	-	14	-		300	150	1,700
Tank 7B	500	450	625	825	1,525	1,250	475	250	650	-	750	800	8,100
Total (Gallons)	1,400	1,025	1,200	1,700	3,350	2,800	1,050	750	1,210		1,850	1,700	18,035

	2016												
Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tank 5	890	-	700	625	650	-	450	-	1,000	650	600	650	6,215
Tank 7A	150		150			-	-	-	125	125	250	500	1,300
Tank 7B	950	-	650	750	725	-	650	-	1,225	600	725	800	7,075
Total							_						* *
(Gallons)	1,990	-	1,500	1,375	1,375	-	1,100	-	2,350	1,375	1,575	1,950	14,590

- No leachate recovered

Table 10. 2016 Stormwater Analytical Results International Paper Joplin, Missouri

	Permit				Outfa	II 001			
	Discharge Limit	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16
Metals (mg/L)									
Zinc***	0.168	NF	NF	0.065	0.064	0.17	0.16	0.061	0.050
Semivolatile Organic Compound	s (ug/L)								
Acenaphthene		NF	NF	2.6 U	2.6 U	2.8 U	2.5 U	2.6 U	2.6 U
Indeno[1,2,3-c,d]pyrene		NF	NF	2.6 U	2.6 U	2.8 U	2.5 U	2.6 U	2.6 U
Pentachlorophenol	5.3	NF	NF	2.6 U	2.6 U	2.8 U	2.5 U	2.6 U	2.6 U
Phenanthrene		NF	NF	2.6 U	2.6 U	2.8 U	2.5 U	2.6 U	2.6 U
Pyrene		NF	NF	2.6 U	2.6 U	2.8 U	2.5 U	2.6 ∪	2.6 U
Dibenzo[a,h]anthracene	0.10**	NF	NF	0.042 U	0.041 U	0.045 U	0.040 U	0.041 U	0.041 U
Conventional Water Quality Para	meters (mg/L)	NF	NF						
Oil and Grease	15	NF	NF	5.0 U	5.0 U	5.0 U	5.0 J	5.0 U	5.0 U
Total Settleable Solids (mL	/L/hr) 2.5	NF	NF	0.20 U	0.20 U				
Total Phenols	·	NF	NF	0.020 U	0.011 U	0.011 U	0.011 U	0.011 U	0.034 J
pH (field, std. units)		NF	NF	7.38	7.71	7.74	6.89	7.58	7.65
Dioxins (pg/L)									
2,3,7,8-TCDD	4.4*	NF	NF	4.4 U	4.4 U				
1,2,3,7,8-PeCDD		NF	NF	4.4 U	4.4 U				
1,2,3,4,7,8-HxCDD		NF	NF	4.4 U	6.9 J	11.0 J	15 J	4.4 U	7.5 U
1,2,3,6,7,8-HxCDD		NF	NF	9.5 U	13.0 J	25.0 J	24 J	6.2 J	7.1 U
1,2,3,7,8,9-HxCDD		NF	NF	6.8 U	11.0 J	21.0 J	24 J	5.0 J	4.4 U
1,2,3,4,6,7,8-HpCDD		NF	NF	420.0 J	430.0	890.0	850.0	160.0	210.0
OCDD		NF	NF	4700.0 J	4900.0 J	10000.0	10000.0	1800.0	2300.0
	···				Outfa	all 002			
		Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16
Metals (mg/L)									
Zinc***	0.168	NF	NF	0.083	0.048 J	0.056	0.045 J	0.54	0.031 J
Semivolatile Organic Compound	ls (ug/L)								
Acenaphthene		NF	NÉ	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U
Indeno[1,2,3-c,d]pyrene		NF	NF	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U
Pentachlorophenol	5.3	NF	NF	2.6 U	2.5 U	2.5 U	2.6 ∪	2.6 U	2.6 U
Phenanthrene		NF	NF	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U
Pyrene		NF	NF	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U
Dibenzo[a,h]anthracene	0.10**	NF	NF	0.041 U	0.040 U	0.040 U	0.041 U	0.042 U	0.041 U
Conventional Water Quality Para	ameters (mg/L)	NF							
Oil and Grease	15	NF	NF	5.0 U	5.0 U				
Settleable Solids (mL/L/hr)		NF	NF	0.20 U	0.20 U				
					0.011 U	0.011 U	0.011 U	0.011 U	0.042 J
		NF	NF	0.020 U				0.0110	
Total Phenols		NF NE	NF NF	0.020 U 7.21					7.35
Total Phenols pH (field, std. units)		NF NF	NF NF	7.21	7.73	7.93	6.54	7.10	7.35
Total Phenols pH (field, std. units) Dioxins (pg/L)		NF	NF	7.21	7.73	7.93			7.35 4.4 U
Total Phenols pH (field, std. units) Dioxins (pg/L) 2,3,7,8-TCDD		NF NF	NF NF	7.21 4.4 U	7.73 4.4 U	7.93 4.4 U	6.54 4.4 U	7.10	4.4 U
Total Phenols pH (field, std. units) Dioxins (pg/L) 2,3,7,8-TCDD 1,2,3,7,8-PeCDD		NF NF NF	NF NF	7.21 4.4 U 4.4 U	7.73 4.4 U 4.4 U	7.93 4.4 U 4.4 U	6.54 4.4 U 4.4 U	7.10 4.4 U 4.4 U	4.4 U 4.4 U
Total Phenols pH (field, std. units) Dioxins (pg/L) 2,3.7,8-TCDD 1,2.3.7,8-PeCDD 1,2.3,4.7,8-HxCDD		NF NF NF	NF NF NF	7.21 4.4 U 4.4 U 4.4 U	7.73 4.4 U 4.4 U 4.4 U	7.93 4.4 U 4.4 U 4.4 U	6.54 4.4 U 4.4 U 4.4 U	7.10 4.4 U 4.4 U 4.4 U	4.4 U 4.4 U 4.4 U
Total Phenols pH (field, std. units) Dioxins (pg/L) 2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD		NF NF NF NF	NF NF NF NF	7.21 4.4 U 4.4 U 4.4 U 4.4 U	7.73 4.4 U 4.4 U 4.4 U 4.4 U	7.93 4.4 U 4.4 U 4.4 U 4.4 U	6.54 4.4 U 4.4 U 4.4 U 4.4 U	7.10 4.4 U 4.4 U 4.4 U 4.4 U	4.4 U 4.4 U 4.4 U 4.4 U
Total Phenols pH (field, std. units) Dioxins (pg/L) 2,3.7,8-TCDD 1,2.3.7,8-PeCDD 1,2.3,4.7,8-HxCDD		NF NF NF	NF NF NF	7.21 4.4 U 4.4 U 4.4 U	7.73 4.4 U 4.4 U 4.4 U	7.93 4.4 U 4.4 U 4.4 U	6.54 4.4 U 4.4 U 4.4 U	7.10 4.4 U 4.4 U 4.4 U	4.4 U 4.4 U 4.4 U

Note: Bold indicates an exceedance of the Permit Discharge Limit.

NF - no flow and therefore, not sampled

U - not detected at specified detection limit

J - estimated concentration below the reporting limit

IJ - interference present

UJ - holding time exceeded

E - exceeds calibration range

A - reporting limit based on signal to noise

--- - not applicable

^{*} Permit limit is for Outfall 001 only. Concentrations less than the minimum quantification limit of 4.4 pq/L are considered in compliance with the permit limit of 0.02 pq/L, per Operating Permit (2014).

^{**} Concentrations less than the minimum quantification level of 0.10 ug/L are considered in compliance with the permit limit of 0.0044 ug/L, per Operating

^{***} Zinc was analyzed as dissolved from 01/2014 thru 06/2014, and as total recoverable thereafter.

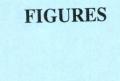
Table 11. Groundwater Sampling Schedule for 2017
International Paper
Joplin, Missouri

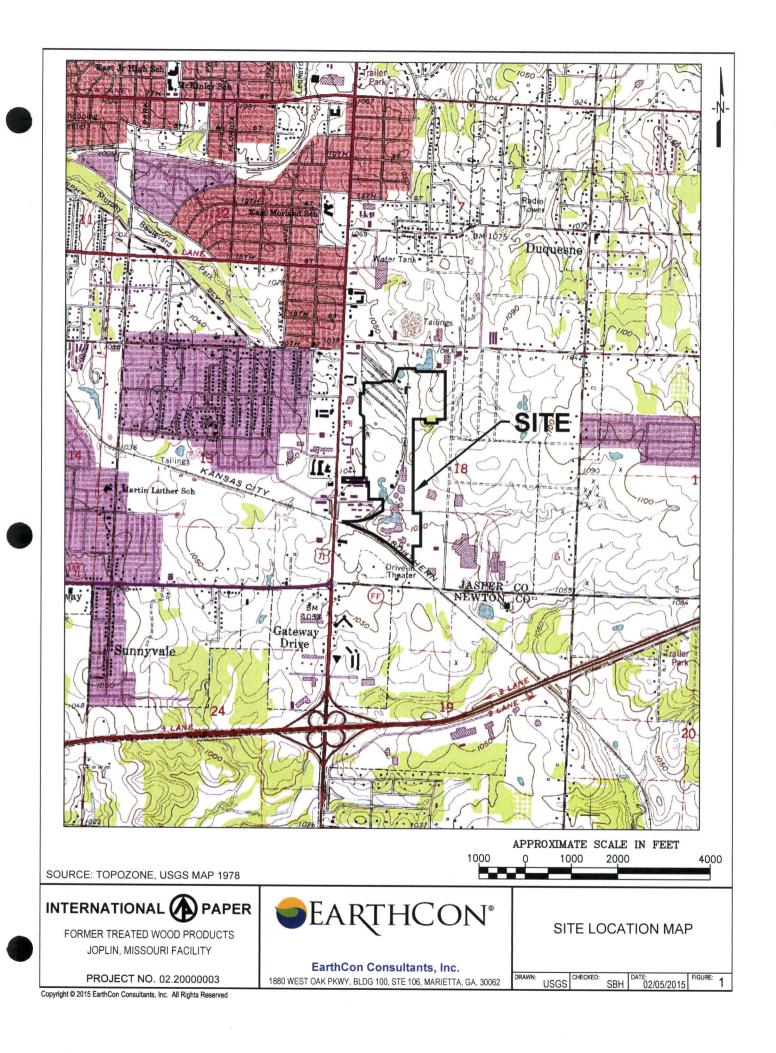
Third Quarter 2017				
Order	Well No.			
	J-11.119			
	J-12.28			
	J-14.30			
	J-21.59			
	J-25.40			
	J-31.60R			
	J-49.17			
	J-52.17R			
	J-55.22			
1	J-16.46			
2	J-08.28			
3	J-13.37			
4	J-23.43R*			

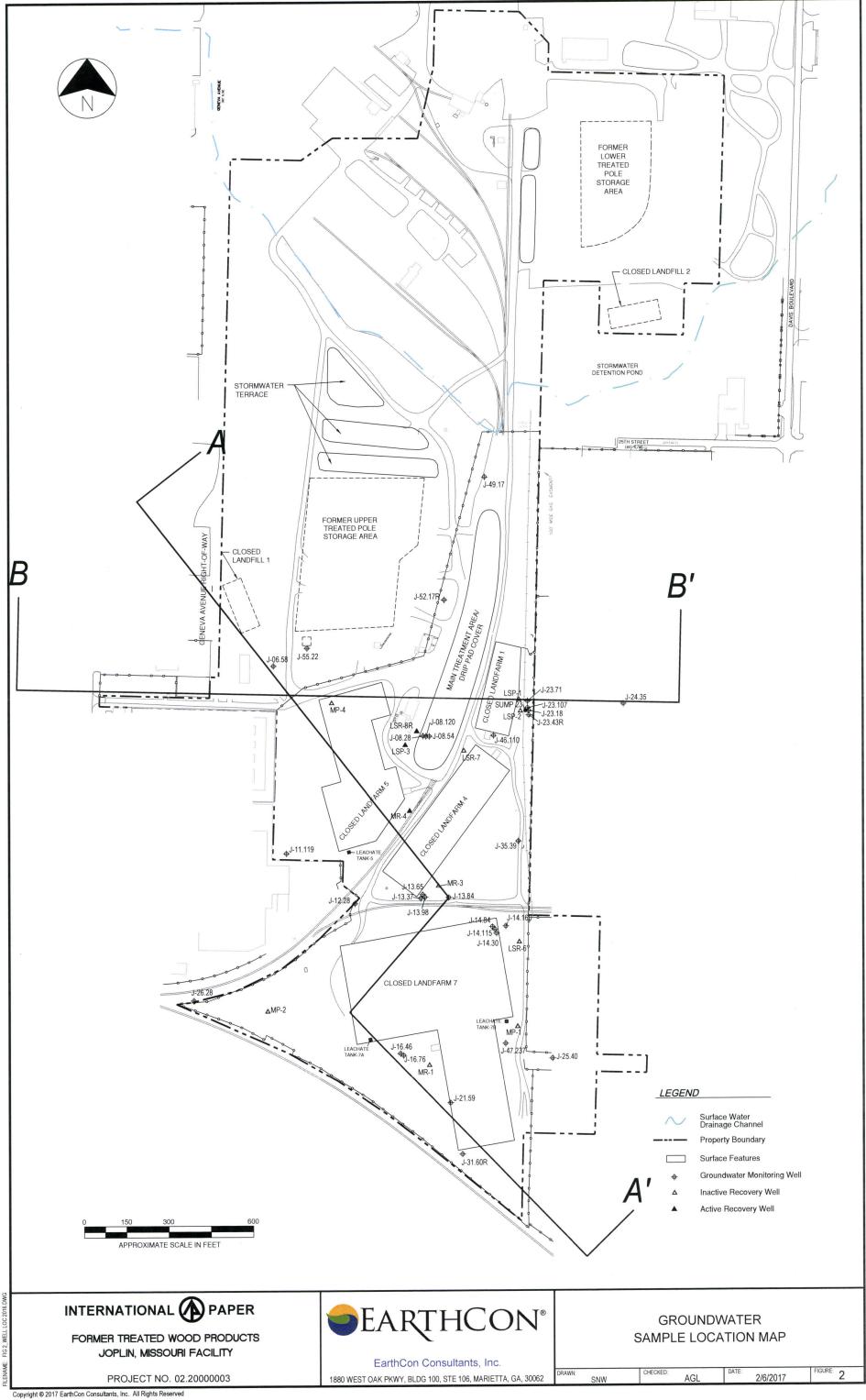
Note: -- These wells do not need to be sampled in any order; however, they should be sampled before the wells that have been specifically ordered.

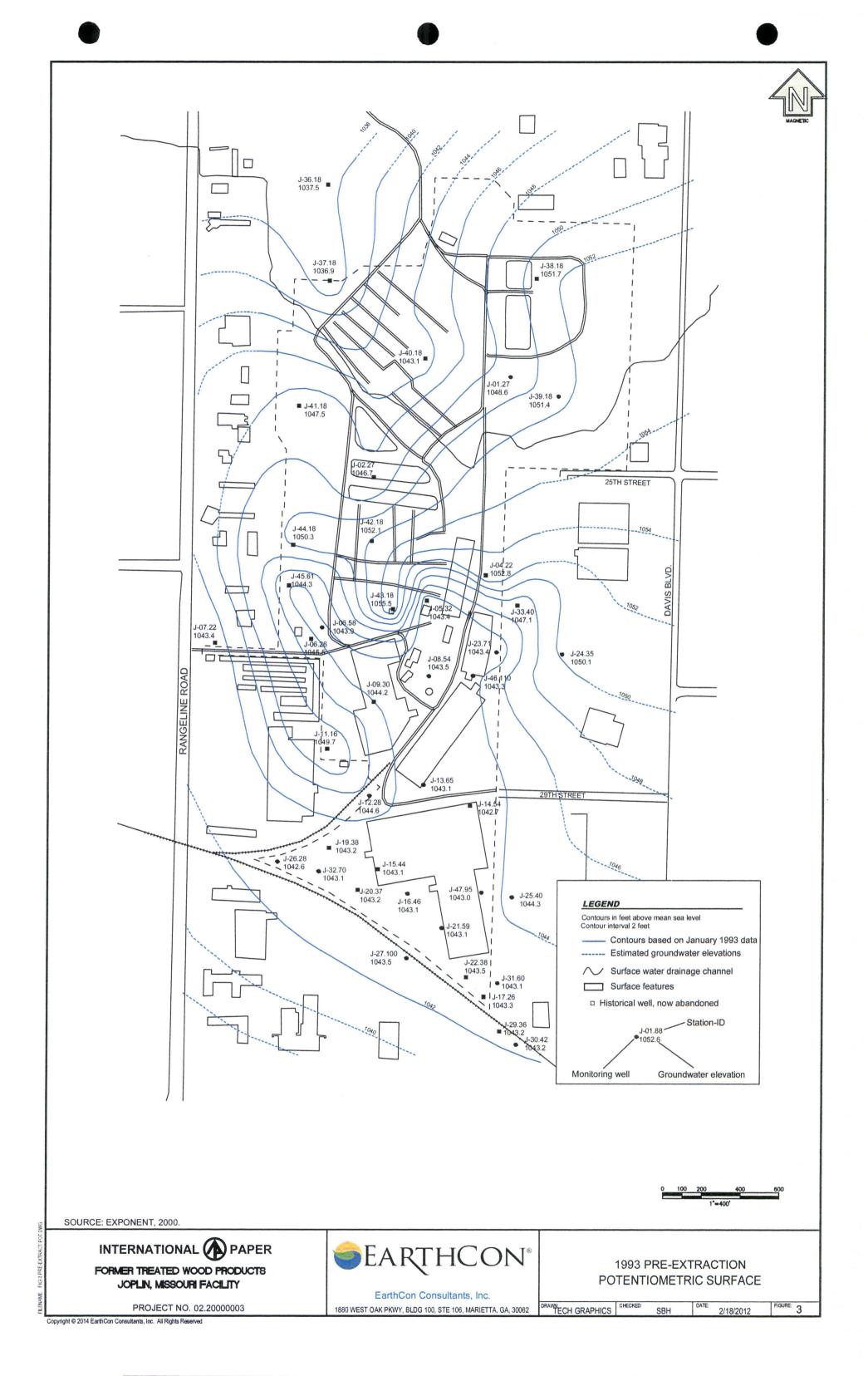
Any well(s) that contains free product will not be sampled.

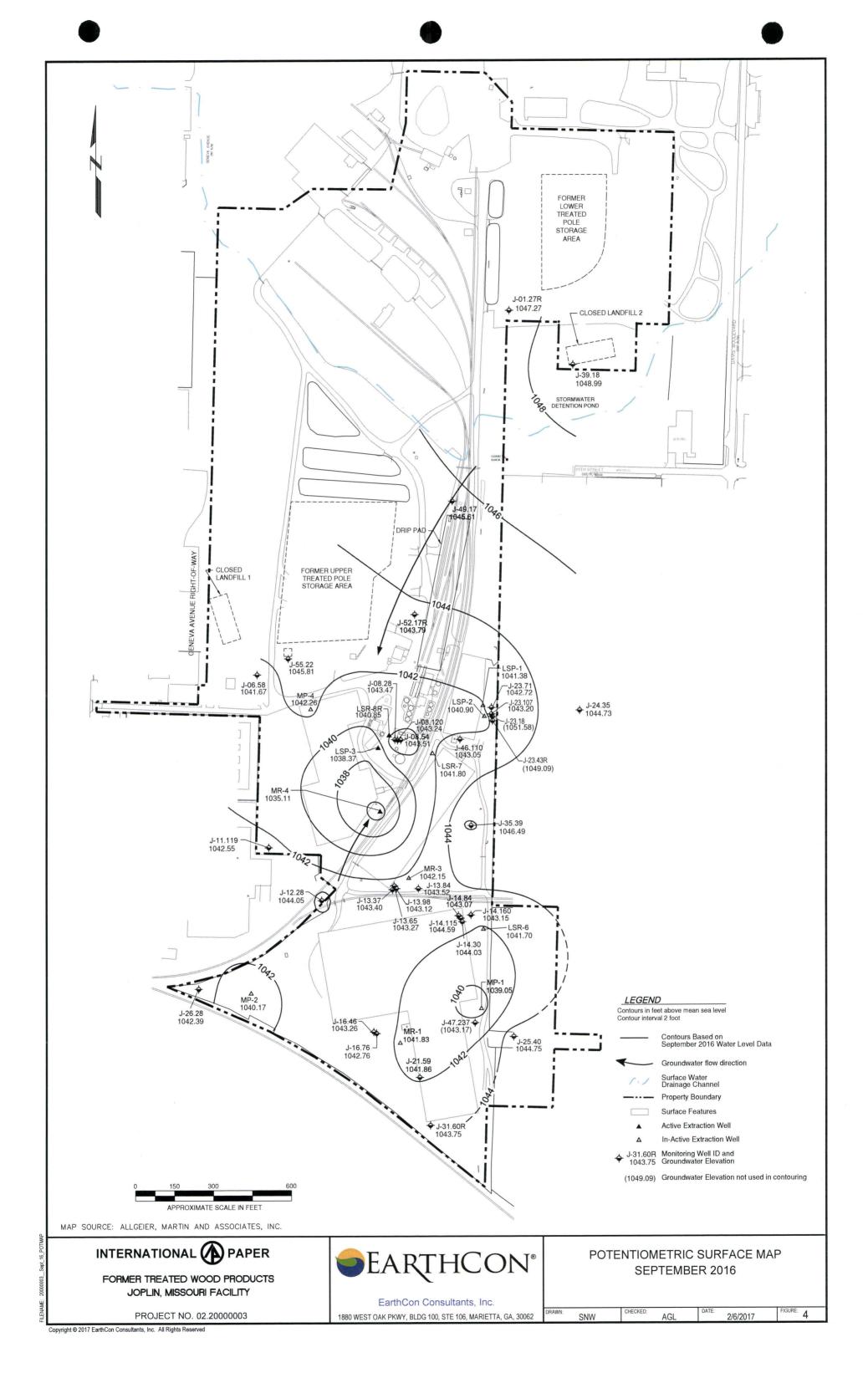
* To be sampled on a voluntary basis (not required by permit) if no free product is present.

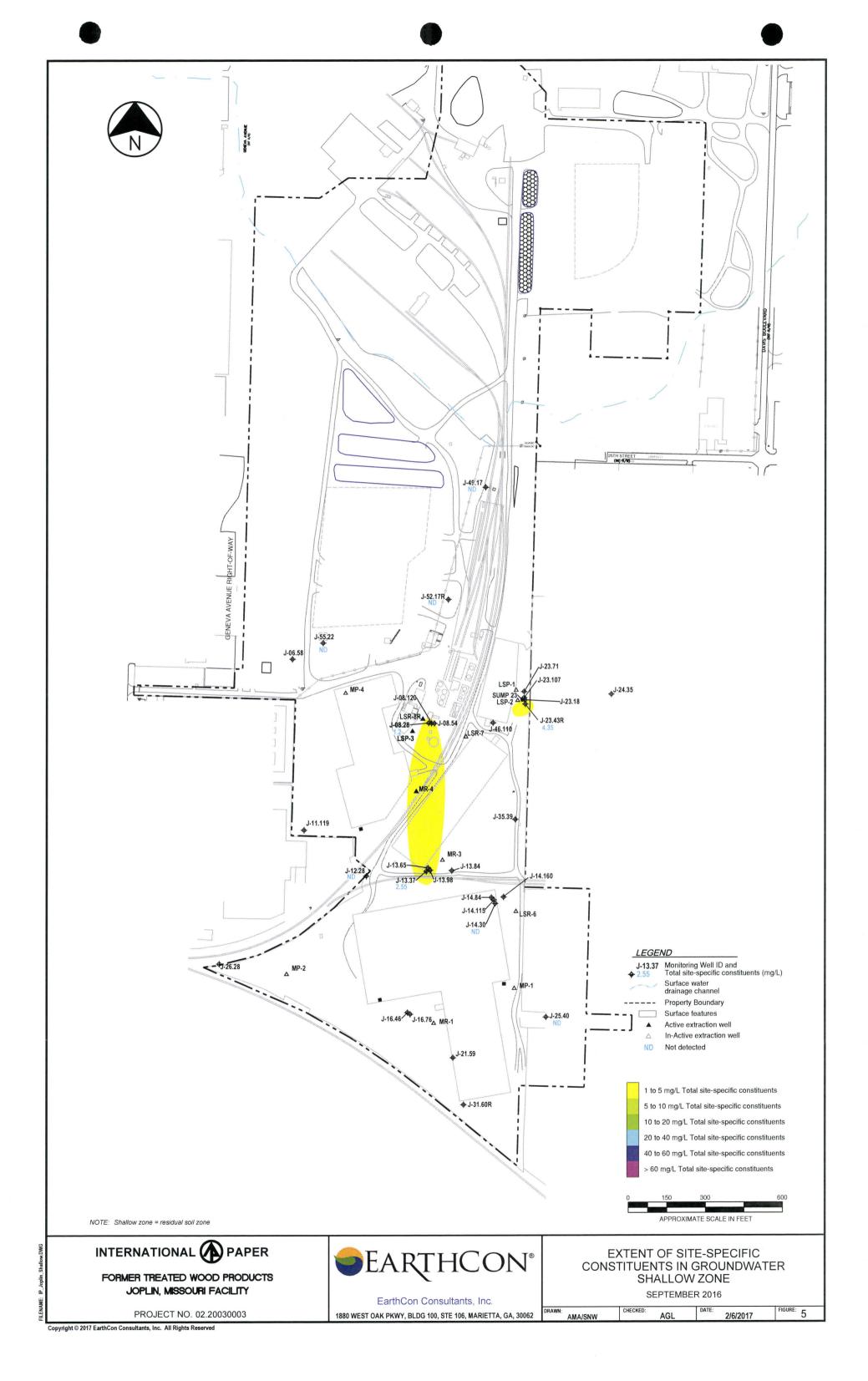


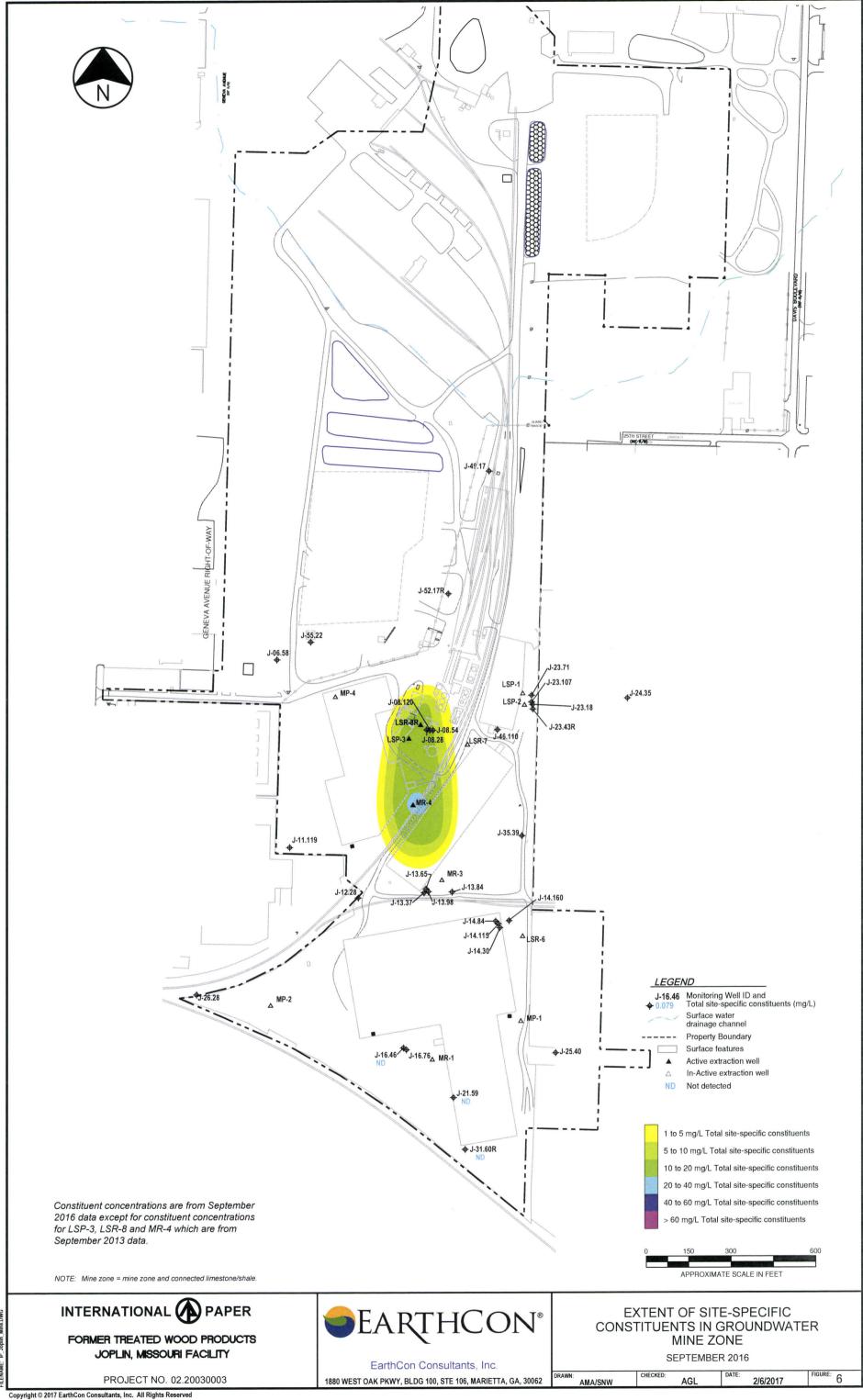


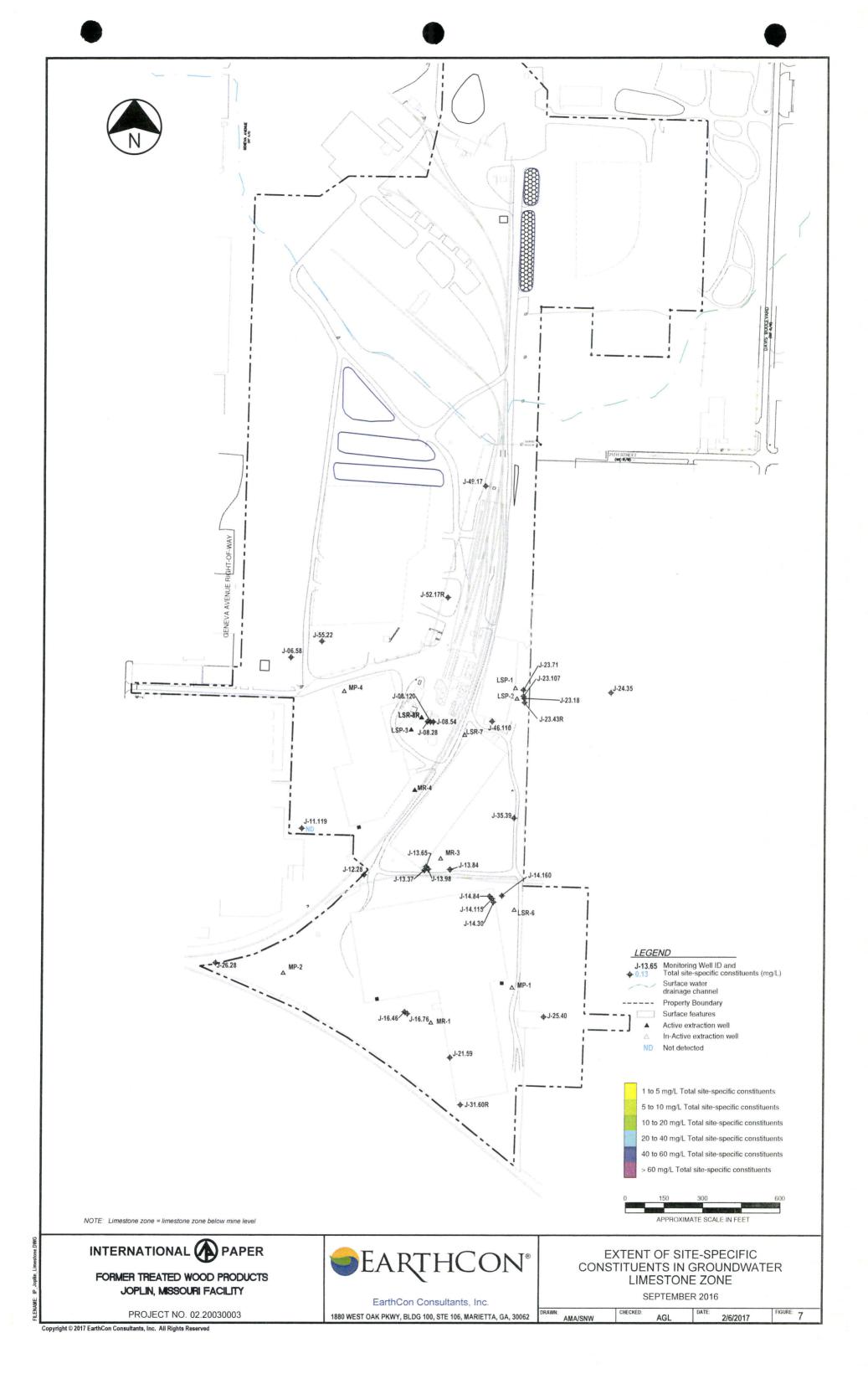


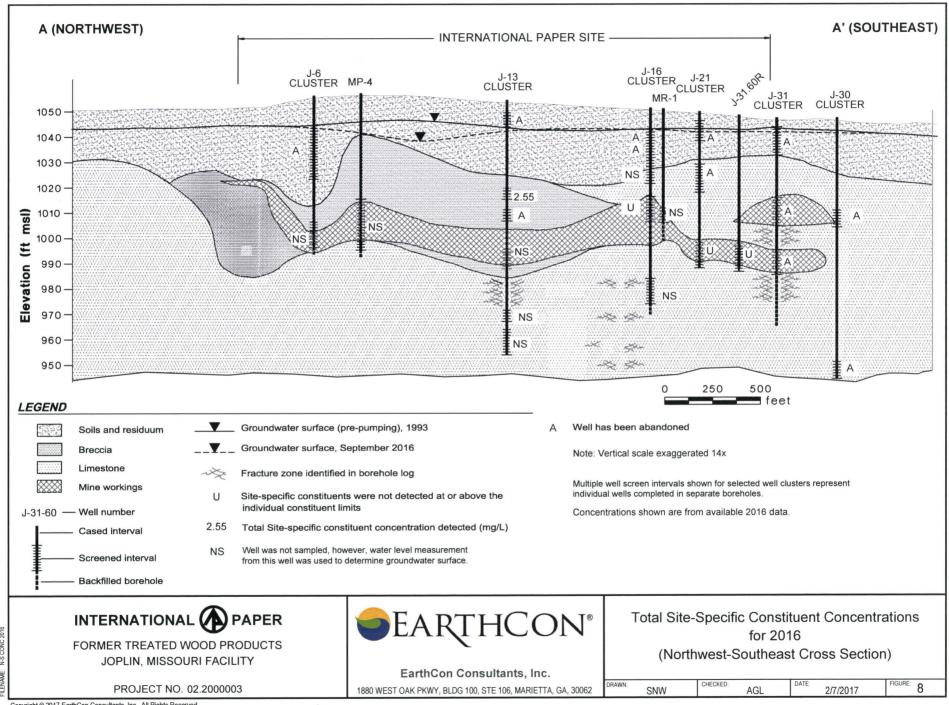


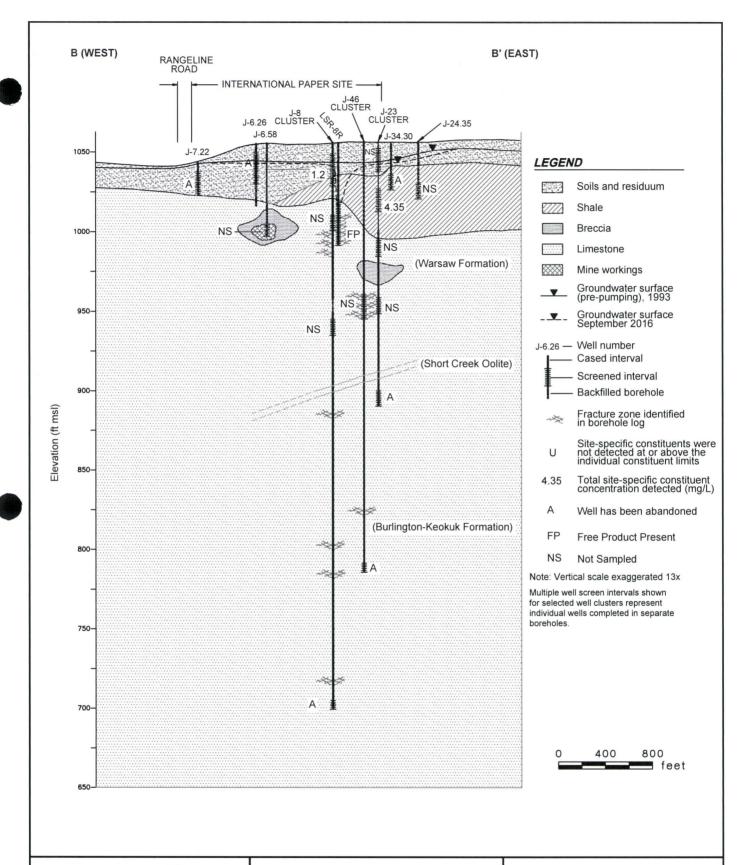












ME: W-E CONC 2016

INTERNATIONAL PAPER

FORMER TREATED WOOD PRODUCTS
JOPLIN, MISSOURI FACILITY

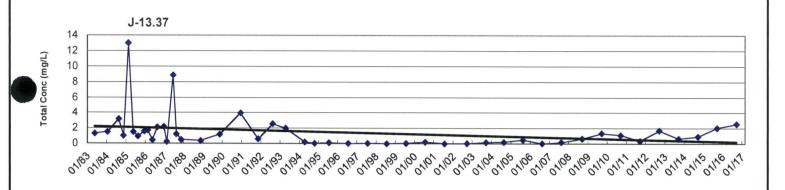
PROJECT NO. 02.2000003

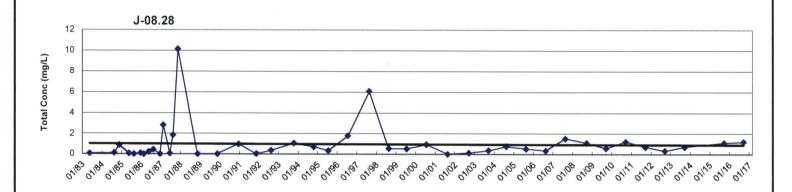


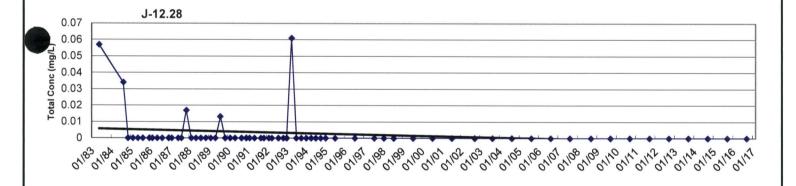
EarthCon Consultants, Inc.
1880 WEST OAK PKWY, BLDG 100, STE 106, MARIETTA, GA, 30062

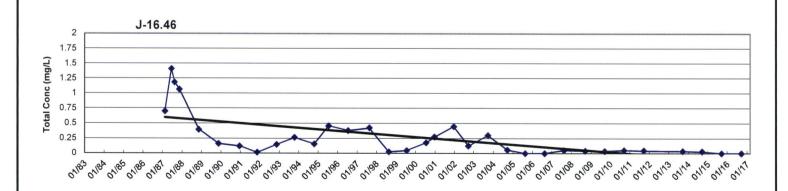
Total Site-Specific Constituent Concentrations for 2016 (West-East Cross Section)

DRAWN: SNW CHECKED: AGL DATE: 2/6/2017 FIGURE: 9









Total Conc- total concentration of sitespecific constituents.

INTERNATIONAL PAPER Former Treated Wood Products Joplin, Missouri Facility

EarthCon Project No. 02.20000003

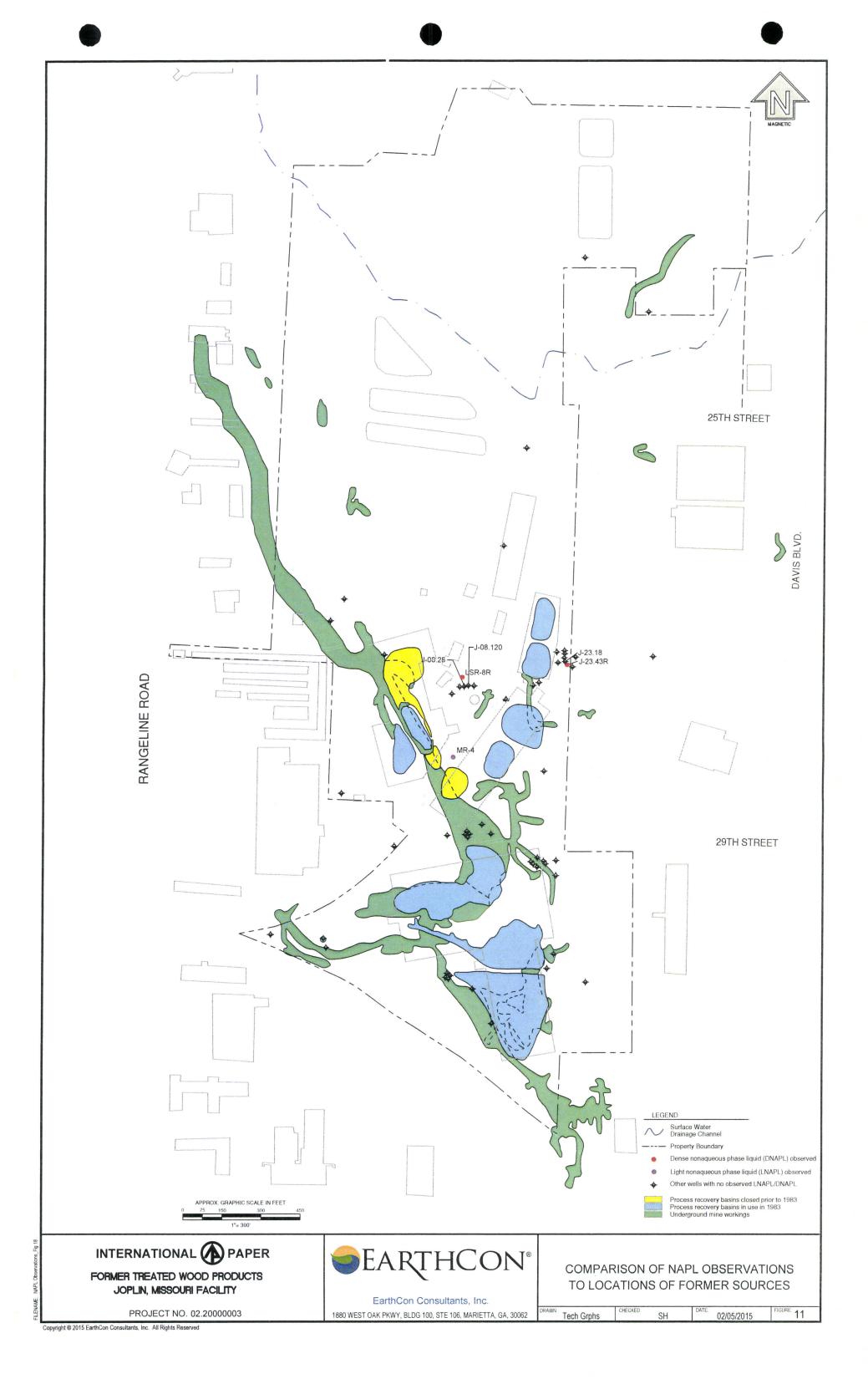
EARTHCON

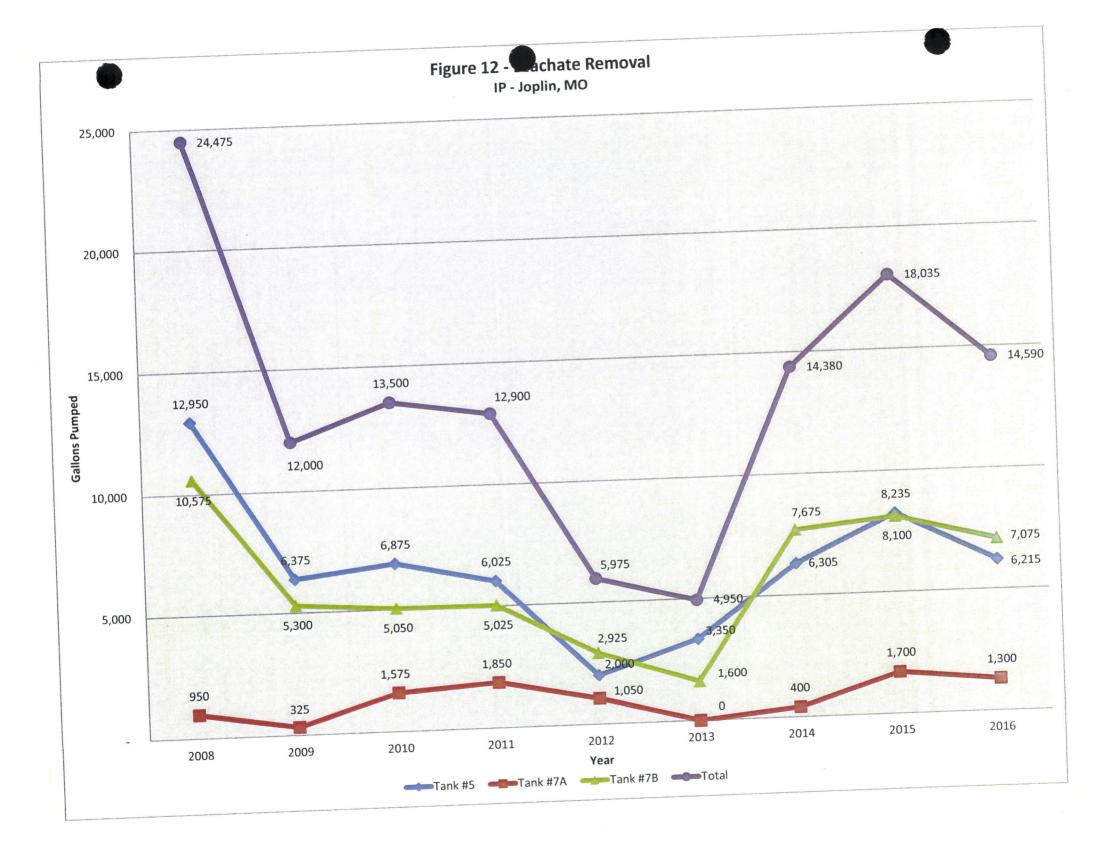
1880 West Oak Pkwy, Bldg 100, Suite 106 Marietta, Georgia 30062

Trend Analysis for Select Wells

Date: 2/6/2017

Figure 10





Appendix A
List of Site Regulatory Background Documents

APPENDIX A

LIST OF SITE REGULATORY BACKGROUND DOCUMENTS

MDNR 2016. Termination of MO-0111325, International Paper Company, Jasper County, September 23, 2016.

MDNR, 2016. No Exposure Certification (MONX00507) from NPDES Storm Water Permitting, September 1, 2016.

International Paper, 2016. No Exposure Exemption, July 13, 2016.

International Paper, 2016. Updated Sampling and Analysis Plan, March 3, 2016.

International Paper, 2015. Post-Closure Care Plan for the Drip Pad and Main Treatment Area, April 2015.

MDNR, 2014. Monitoring Well Installation/Abandonment Extension Request #2 (Approval), December 23, 2014.

International Paper, 2014. Request for Extension: Off-Site Well Abandonment Activities and J-52.17R Installation, International Paper, Joplin, MO. December 12, 2014.

International Paper, 2014. Class 1 Permit Modification-Replacement of well LSR-8, International Paper, Joplin, MO. November 14, 2014.

MDNR, 2014. Monitoring Well Installation/Abandonment Request (Approval), October 2, 2014.

International Paper, 2014. Request for Extension, Off-Site Well Activities and J-52.17R Installation, International Paper, Joplin, MO. September 23, 2014.

MDNR, 2014. Approval of Modification to State Operating Permit #MO-0111325, January 29, 2014.

International Paper, 2013. Framing Building Area Cleanup Action Report, International Paper, Joplin, MO. May 15, 2013.

EPA, 2013. Framing Building Area Cleanup Action Report Approval with Comments Letter, International Paper, Joplin, MO. June 17, 2013.

International Paper, 2013. Part A Permit Application, International Paper, Joplin, MO. November 27, 2013.

International Paper, 2013. Post-Closure Care Plan, International Paper, Joplin, MO. November 27, 2013.

International Paper, 2013. Permit Modification Request to the Missouri State Operating Permit (MO-0111325), International Paper, Joplin, MO. December 13, 2013.

MDNR (2013). Missouri Hazardous Waste Management Facility Permit - Part I, International Paper, Joplin, Missouri, September 30, 2013.

EPA, 2013. Hazardous and Soil Waste Amendment permit (MOD 01729935). RCRA Part II Permit issued to International Paper by U.S. EPA Region 7 on September 30, 2013.

International Paper (2012). Groundwater Sampling and Analysis Plan recommendation letter submitted to MDNR, dated December 5, 2012.

MDNR (2012). MDNR approval for a 30-day extension to submit responses to the CAER, dated July 5, 2012.

MDNR (2012). MDNR reviewed and provided comments on the Sampling and Analysis Plan in a letter dated August 13, 2012. International Paper, Joplin, MO.

MDNR (2012). MDNR approved Appendix IX leachate sampling in a letter dated August 22, 2012. International Paper, Joplin, MO.

International Paper (2012). Closure Plan for the Drip Pad and Main Treatment Area submitted to EPA and MDNR on January 23, 2012. International Paper, Joplin, MO.

International Paper (2011). Cleanup Action Plan for the Framing Building Area submitted to EPA and MDNR on October 17, 2011. International Paper, Joplin, MO.

EPA (2011). Letter of approval for the SSC Report (October 3, 2011). International Paper, Joplin, MO.

International Paper (2011). A response to comments and revised SSC Report pages submitted to EPA and MDNR on August 24, 2011. International Paper, Joplin, MO.

International Paper (2011). Supplemental RFI Report, dated August 2, 2011. International Paper, Joplin, MO.

EPA (2011). EPA's approval letter and comments for the April 2011 SSC Report (July 20, 2011). International Paper, Joplin, MO.

International Paper (2011). Supplemental Site Characterization (SSC) Report submitted to EPA and MDNR (April 18, 2011). International Paper, Joplin, MO.

MDNR (2010). MDNR approved the RFI Workplan Addendum in a letter dated November 15, 2010. International Paper, Joplin, MO.

International Paper, (2010). RFI Workplan Addendum submitted to MDNR and EPA on October 11, 2010. International Paper, Joplin, MO.

International Paper (2010). Response to EPA's comments and conditions (March 17, 2010) regarding the SSCSP, dated April 16, 2010. International Paper, Joplin, MO.

EPA (2010). The SSCSP was conditionally approved by EPA in a letter, dated March 17, 2010. International Paper, Joplin, MO.

MDNR (2009). Approval letter of the Addendum to the RFI Workplan (November 13, 2009). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2009). Addendum to the RCRA Facility Investigation Workplan (October 29, 2009). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2009). Site Supplemental Characterization and Sampling Plan – Revision 1.0 (September 29, 2009). International Paper, Joplin, MO.

MDNR (2009). International Paper Company, Joplin, Missouri; Conditional approval of the RFI Workplan, requesting additional sampling (May 18, 2009). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2009). RCRA Facility Investigation Workplan (March 9, 2009). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2009). Site Supplemental Characterization and Sampling Plan (January 27, 2009). International Paper, Joplin, MO.

MDNR (2008). International Paper Company, Joplin, Missouri; Comments on RFI Report requesting additional sampling (December 4, 2008). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2008). RCRA Facility Investigation Report (October 6, 2008). International Paper, Joplin, MO.

EPA (2008). International Paper Company, Joplin, Missouri; Comments on Closure Plan – Revision 1.0 requesting a Site Supplemental Characterization and Sampling Plan (August 12, 2008). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2008). Decommission Report (January 10, 2008). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2007). Closure Plan - Revision 1.0 (October 26, 2007). International Paper, Joplin, MO.

EPA (2008). International Paper Company, Joplin, Missouri; Comments on Closure Plan (June 20, 2007). International Paper, Joplin, MO.

Premier Environmental Services, Inc. (2006). Closure Plan. (July 10, 2006). International Paper, Joplin, MO.

International Paper (2005). Site Characterization Report (January 7, 2006). Prepared by Premier Environmental Services, Inc. for International Paper, Joplin, Missouri.

International Paper (2004). Site Characterization Work Plan, Revision 1 (July 30, 2004). Prepared by Premier Environmental Services, Inc. for International Paper, Joplin, Missouri.

Premier Environmental Services, Inc. (2004). Part B Permit Application for 10-year renewal. (March 6, 2004). International Paper, Joplin, MO.

EPA (2004). International Paper Company, Joplin, Missouri; Consent Agreement and Final Order (August 3, 2004). International Paper, Joplin, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; approval of Class 1 permit modification for low-flow groundwater sampling procedure as described in groundwater field sampling plan addendum (December 17, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

Exponent (2001). Groundwater field sampling plan addendum; International Paper Treated Wood Products Facility, Joplin, MO (August 7, 2001). Exponent, Bellevue, WA.

International Paper (2001). Letter transmitting results of confirmatory soil sampling in Landfarms 1 and 4 (May 18, 2001). International Paper, Joplin, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; approval of closure plan for Landfarms 1 and 4 (April 12, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; approval of final design specifications and post-closure care plan for Landfarms 5 and 7 (April 12, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; letter transmitting comments on closure plan for Landfarms 1 and 4 (March 1, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; comment letter on final design specifications and post-closure care plan for Landfarms 5 and 7 (February 26, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (2001). Letter responding to comments contained in February 13, 2001, letter from MDNR (February 22, 2001). International Paper, Joplin, MO.

MDNR (2001). International Paper Company, Joplin, Missouri; comment letter on closure plan for Landfarms 1 and 4 (February 13, 2001). Missouri Department of Natural Resources, Jefferson City, MO.

Exponent (2000). Closure plan for Landfarms 1 and 4: International Paper Treated Wood Products Facility, Joplin, MO (October 20, 2000). Exponent, Bellevue, WA.

Exponent (2000). Indoor air monitoring work plan: International Paper Treated Wood Products Facility, Joplin, MO (October 20, 2000). Exponent, Bellevue, WA.

Exponent (2000). Post-closure care plan for Landfarms 5 and 7: International Paper Treated Wood Products Facility, Joplin, MO (October 20, 2000). Exponent, Bellevue, WA.

MDNR (2000). International Paper Company, Joplin, Missouri; approval of Class 2 and Class 3 modification for redevelopment of soil treatment cells and CAMU designation. Part I Permit;

EPA ID MOD007129935 (July 25, 2000). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (1999). Approval to sell 0.87 acre of International Paper property at the Joplin facility (November 30, 1999). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1999). Letter of notification to Missouri Department of Natural Resources reporting punctures in landfarm liner 7 (November 1, 1999). International Paper, Joplin, MO.

MDNR (1999). Approval to sell 1.78 acres of International Paper property at the Joplin facility (September 1, 1999). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (1999). Waiver of landfarm treatment cycle reporting requirements (August 16, 1999). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (1998). Variance granted to abandon monitoring wells at Joplin facility (December 7, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1998). Revised Resource Conservation and Recovery Act Part A permit application (MOD007129935), International Paper Company, Joplin facility. International Paper, Joplin, MO.

International Paper (1998). Request for Class 2 modification to Part B post-closure hazardous waste facility permit regarding accelerated closure and brownfield redevelopment of the Joplin facility's soil bioremediation units (September 22, 1998). International Paper, Joplin, MO.

International Paper (1998). Request for Class 3 modification to Part B post-closure hazardous waste facility permit regarding designation of Landfarms 5 and 7 as CAMUs (September 22, 1998). International Paper, Joplin, MO.

MDNR (1998). Approval of Class 2 modification to Part B post-closure hazardous waste facility permit regarding modified groundwater monitoring and Stormwater/sediment monitoring programs (September 21, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1998). Letter of notification to City of Joplin regarding Joplin facility's Solarchem[™] effluent pentachlorophenol exceedances (September 16, 1998). International Paper, Joplin, MO.

International Paper (1998). Letter of notification to Missouri Department of Natural Resources reporting punctures in landfarm liners 1 and 7 (August 27, 1998). International Paper, Joplin, MO.

MDNR (1998). Approval of a one-year extension of current treatment cycle (August 26, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

MDNR (1998). Approval to sell 5.06 acres of International Paper property at the Joplin facility (July 29, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1998). Stormwater discharge permit (MO-0111325) variance request, International Paper Company, Joplin facility (approval pending). International Paper, Joplin, MO.

International Paper (1998). Request for Class 2 modification to Part B post-closure hazardous waste facility permit regarding modified groundwater monitoring and Stormwater/sediment monitoring programs (April 21, 1998). International Paper, Joplin, MO.

MDNR (1998). Approval of Class 2 modification to Part B post-closure hazardous waste facility permit regarding outstanding permit appeal issues and reductions in polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran monitoring (April 20, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1998). Groundwater field sampling plan: Joplin Treated Wood Products Facility (April 15, 1998). International Paper, Joplin, MO.

MDNR (1998). Termination of permit UI-0000004 and approval of well injection permit (March 25, 1998). Missouri Department of Natural Resources, Jefferson City, MO.

International Paper (1998). Stormwater permit renewal application (MO-0111325) (February 4, 1998). International Paper, Joplin, MO.

Exponent (1998). Joplin landfarm soil trenching data technical memorandum. Exponent, Bellevue, WA.

International Paper (1997). Request for Class 2 modification regarding reductions in polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran monitoring and outstanding Joplin facility RCRA Part B Permit appeal issues (November 25, 1997). International Paper, Joplin, MO.

AG (1997). Settlement Agreement between the Missouri Department of Natural Resources and International Paper regarding Abatement Order 00882 (September 3, 1997). Attorney General of Missouri, Jefferson City, MO.

PTI (1997). Monitoring well installation plan, International Paper Company, Joplin facility. Submitted to MDNR in June 1997; approved by MDNR on October 14, 1997.

PTI (1997). Modification to biotreatment monitoring schedule, International Paper Company, Joplin facility. Submitted to MDNR on May 21, 1997; approved by MDNR on September 12, 1997.

PTI (1997). Bench scale demonstration plan: rocks decontamination, International Paper, Joplin facility. Submitted to MDNR on April 4, 1997; approved by MDNR on June 10, 1997.

PTI (1997). Treated soil movement modification, International Paper Joplin facility. Submitted to MDNR on May 19, 1997; approved by MDNR on June 6, 1997.

PTI (1997). Nonaqueous-phase liquid recovery plan: treated wood products facility. Joplin, Missouri. Submitted to MDNR on February 27, 1997; approved by MDNR on March 24, 1997.

2016 Annual Groundwater Monitoring and Corrective Action Progress Report International Paper – Joplin, MO

International Paper (1996). Conversion of well LSR-8 in lieu of installing well MP-3 (February 2, 1996).

MDNR (1995). Closure plan modification request approval letter (July 31, 1995).

MDNR (1994). Part I post-closure permit, RCRA Part B hazardous waste facility permit, International Paper, Joplin, Missouri.

International Paper (1994). Consolidated post-closure permit application, International Paper, Joplin, Missouri.

MDNR (1992). Closure plan approval letter, MOD 007129935, International Paper, treated wood products site, Joplin, Missouri.

U.S. EPA (1992). HSWA permit (MOD 007129935). Issued to International Paper by EPA in December 1988 and modified in December 1990, October 1992, and July 2000.

International Paper (1991). Response to MDNR closure plan comments, treated wood products facility, Joplin, Missouri, International Paper, Joplin, MO.

Grant (1990). Closure plan for Joplin treated wood products facility, former waste management area: treated wood products facility, Joplin, Missouri.

Appendix B
GWTS Effluent Laboratory Reports





February 24, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: GWTS Quarterly IP-Joplin

Pace Project No.: 60213038

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on February 15, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

lowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60213038001	LAG CARBON EFFLUENT - COMP	Water	02/12/16 11:45	02/15/16 09:40
60213038002	LAG CARBON EFFLUENT - GRAB	Water	02/12/16 11:55	02/15/16 09:40



SAMPLE ANALYTE COUNT

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60213038001	LAG CARBON EFFLUENT - COMP	EPA 6010	SMW	1
		SM 2540D	LJS	1
		SM 5210B	LJS	1
60213038002	LAG CARBON EFFLUENT - GRAB	EPA 8270	JMT	8
		EPA 1664A	ESM	1



PROJECT NARRATIVE

Project:

GWTS Quarterty IP-Joplin

Pace Project No.:

60213038

Method: **Description: 6010 MET ICP**

EPA 6010

Client:

EarthCon Site Services Inc-International Paper

Date:

February 24, 2016

General Information:

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Method: EPA 8270

Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

February 24, 2016

General Information:

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



PROJECT NARRATIVE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

February 24, 2016

General Information:

1 sample was analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

February 24, 2016

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Method:

SM 5210B

Description: 5210B BOD, 5 day

Client:

EarthCon Site Services Inc-International Paper

Date:

February 24, 2016

General Information:

1 sample was analyzed for SM 5210B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H3: Sample was received or analysis requested beyond the recognized method holding time.

• LAG CARBON EFFLUENT - COMP (Lab ID: 60213038001)

Sample Preparation:

The samples were prepared in accordance with SM 5210B with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

Sample: LAG CARBON EFFLUENT -COMP

Lab ID: 60213038001

Collected: 02/12/16 11:45

Received: 02/15/16 09:40

Matrix: Water

CAS No.

Parameters

Units

Report Limit

Prepared

Analyzed

Qual

6010 MET ICP

Zinc

Analytical Method: EPA 6010 Preparation Method: EPA 3010 0.060

Results

0.050

DF

02/19/16 10:00 02/22/16 13:20 7440-66-6

2540D Total Suspended Solids

Analytical Method: SM 2540D 52.0

mg/L

mg/L

5.0 1

02/19/16 09:04

5210B BOD, 5 day

BOD, 5 day

Total Suspended Solids

Analytical Method: SM 5210B Preparation Method: SM 5210B

17.4 mg/L 2.0

02/15/16 14:14 02/20/16 12:32

Н3



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.: 60213038

Date: 02/24/2016 08:51 PM

Sample: LAG CARBON EFFLUENT - GRAB	Lab ID: 602	13038002	Collected: 02/12/1	6 11:55	Received: 02	/15/16 09:40	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	nod: EPA 827	70 Preparation Met	nod: EPA	A 3510			
Pentachlorophenol	ND	mg/L	0.010	1	02/17/16 00:00	02/18/16 18:16	87-86-5	
Phenol	ND	mg/L	0.010	1	02/17/16 00:00	02/18/16 18:16	108-95-2	
Surrogates								
Nitrobenzene-d5 (S)	93	%	26-105	1	02/17/16 00:00	02/18/16 18:16	4165-60-0	
2-Fluorobiphenyl (S)	80	%	24-123	1	02/17/16 00:00	02/18/16 18:16	321-60-8	
Terphenyl-d14 (S)	84	%	43-123	1	02/17/16 00:00	02/18/16 18:16	1718-51-0	
Phenol-d6 (S)	30	%	10-63	1	02/17/16 00:00	02/18/16 18:16	13127-88-3	
2-Fluorophenol (S)	45	%	13-73	1	02/17/16 00:00	02/18/16 18:16	367-12-4	
2,4,6-Tribromophenol (S)	97	%	10-169	1	02/17/16 00:00	02/18/16 18:16	118-79-6	
HEM, Oil and Grease	Analytical Met	hod: EPA 166	64A					
Oil and Grease	ND	mg/L	5.0	1		02/24/16 11:13	;	



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

QC Batch:

MPRP/34923

QC Batch Method:

EPA 3010

Analysis Method:

EPA 6010

Analysis Description:

6010 MET

Associated Lab Samples:

60213038001

Matrix: Water

METHOD BLANK: 1712347 Associated Lab Samples:

60213038001

Reporting

Parameter

Units

Units

mg/L

Blank Result

Limit

Analyzed

Qualifiers

Zinc

mg/L

ND

0.050 02/22/16 12:40

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1712348

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc

Zinc

Units mg/L

103

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1712349

1712350

1.0

MS

Result

MS

MSD

% Rec

Max

RPD RPD Qual

MS MSD

60212724001 Spike Result Conc. 156 ug/L 1

Spike Conc.

MSD Result 1.1 1.2

% Rec 96 % Rec Limits 100 75-125

20



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

QC Batch:

OEXT/53107

Analysis Method:

EPA 8270

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water MSSV

Associated Lab Samples:

60213038002

METHOD BLANK: 1710899

Date: 02/24/2016 08:51 PM

Matrix: Water

Associated Lab Samples: 60213038002

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Pentachlorophenol	mg/L	ND	0.010	02/18/16 08:35	
Phenol	mg/L	ND	0.010	02/18/16 08:35	
2,4,6-Tribromophenol (S)	%	100	10-169	02/18/16 08:35	
2-Fluorobiphenyl (S)	%	84	2 4 -123	02/18/16 08:35	
2-Fluorophenol (S)	%	45	13-73	02/18/16 08:35	
Nitrobenzene-d5 (S)	%	89	26-105	02/18/16 08:35	
Phenol-d6 (S)	%	28	10-63	02/18/16 08:35	
Terphenyl-d14 (S)	%	97	43-123	02/18/16 08:35	

LABORATORY CONTROL SAMPLE:	1710900					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Pentachlorophenol	mg/L	.05	0.049	99	58-126	
Phenol	mg/L	.05	0.016	32	15-57	
2,4,6-Tribromophenol (S)	%			117	10-169	
2-Fluorobiphenyl (S)	%			98	24-123	
2-Fluorophenol (S)	%		•	51	13-73	
Nitrobenzene-d5 (S)	%			103	26-105	
Phenol-d6 (S)	%			34	10-63	
Terphenyl-d14 (S)	%			101	43-123	

MATRIX SPIKE & MATRIX SF	PIKE DUPLIC	CATE: 17109	01		1710902							
Parameter	Units	60212926001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Pentachlorophenol	mg/L	ND	.056	.05	0.047	0.048	84	96	22-147	2	20	
Phenol	mg/L	ND	.056	.05	0.014	0.015	25	30	10-49	4	36	
2,4,6-Tribromophenol (S)	%						90	100	10-169		42	
2-Fluorobiphenyl (S)	%						75	83	24-123			
2-Fluorophenol (S)	%						40	46	13-73		30	
Nitrobenzene-d5 (S)	%						84	92	26-105			
Phenol-d6 (S)	%						26	30	10-63		34	
Terphenyl-d14 (S)	%						79	87	43-123			



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

QC Batch:

WET/60241

QC Batch Method: **EPA 1664A** Analysis Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

60213038002

METHOD BLANK: 1714224

Associated Lab Samples:

60213038002

Blank

Result

Matrix: Water

Reporting

Limit

Qualifiers Analyzed

Oil and Grease

Units mg/L

ND

02/24/16 11:08

LABORATORY CONTROL SAMPLE: Parameter

Parameter

Parameter

1714225

Spike

LCS Result

LCS % Rec % Rec Limits

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

Units

mg/L

mg/L

Conc. 40

60213325001

Result

38.6

96

78-114

Qualifiers

MATRIX SPIKE SAMPLE:

1714226

Spike Conc.

MS Result

MS % Rec

93

18

% Rec Limits

Qualifiers

Date: 02/24/2016 08:51 PM

SAMPLE DUPLICATE: 1714227

Parameter

60213325002 Units Result

ND

ND

Dup Result

40

ND

RPD

37.1

Max RPD

Qualifiers

78-114



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

QC Batch:

WET/60163

Analysis Method:

SM 2540D

QC Batch Method: SM 2540D Analysis Description:

2540D Total Suspended Solids

Associated Lab Samples:

Associated Lab Samples:

60213038001

METHOD BLANK: 1712262

60213038001

Blank

Parameter

Units

Reporting Result Limit

Matrix: Water

Analyzed

Qualifiers

Total Suspended Solids

mg/L

ND

59.0

02/19/16 08:52 5.0

SAMPLE DUPLICATE: 1712263

Units

mg/L

60212900001 Result

Dup Result

RPD

Max RPD

10

Qualifiers

SAMPLE DUPLICATE: 1712284

Total Suspended Solids

Parameter

Parameter

Units

60213018002 Result

Dup Result RPD

Max RPD

Qualifiers

Total Suspended Solids

Date: 02/24/2016 08:51 PM

mg/L

18.0

17.0

59.0

6

0

10



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

QC Batch:

WET/60071

QC Batch Method:

SM 5210B

Analysis Method:

SM 5210B

Analysis Description:

5210B BOD, 5 day

Associated Lab Samples:

60213038001

Matrix: Water

METHOD BLANK: 1710124 Associated Lab Samples:

60213038001

Blank Result

Reporting

Limit

Analyzed

Qualifiers

BOD, 5 day

Units mg/L

ND

2.0 02/20/16 12:30

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1710125

Spike

LCS

LCS % Rec % Rec Limits

Qualifiers

BOD, 5 day

Units mg/L

Units

Conc. 198 Result

90

SAMPLE DUPLICATE: 1710130

Parameter

60213039001 Result

Dup Result

179

RPD

Max RPD

85-115

Qualifiers

BOD, 5 day

mg/L

1490

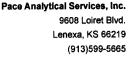
1490

0

17

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS





QUALIFIERS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60213038

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Date: 02/24/2016 08:51 PM

H3 Sample was received or analysis requested beyond the recognized method holding time.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.: 60213038

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60213038001	LAG CARBON EFFLUENT - COMP	EPA 3010	MPRP/34923	EPA 6010	ICP/25590
60213038002	LAG CARBON EFFLUENT - GRAB	EPA 3510	OEXT/53107	EPA 8270	MSSV/17261
60213038002	LAG CARBON EFFLUENT - GRAB	EPA 1664A	WET/60241		
60213038001	LAG CARBON EFFLUENT - COMP	SM 2540D	WET/60163		
60213038001	LAG CARBON EFFLUENT - COMP	SM 5210B	WET/60071	SM 5210B	WET/60190



Sample Condition Upon Receipt



Client Name: <u>Earth con/Prems / Int</u> . Pa	per				Optional
Courier: FedEx UPS 🗗 VIA 🗆 Clay 🗆	PEX ECI	□ Pa	ace 🗆 Other 🗆	☐ Client ☐	Proj Due Date:
Tracking #: <u>JA52 326 677 5</u>	Pace Shipping l	_abel Use	d? Yes □ N	lo DSP	Proj Name:
Custody Seal on Cooler/Box Present: Yes ⊠ No	☐ Seals inta	act: Yes	×□ No □		
Packing Material: Bubble Wrap 99 Bubble Ba	gsDP F	Foam 🗆	None □	Other 🗆	
Thermometer Used: CF+8.8 CF+8.7 T-262 T	ype of Ice: 🐠			oles received or	ice, cooling process has begun.
Cooler Temperature: 2.6		(circle or	ne)	Date and initiation	als of person examining
Temperature should be above freezing to 6°C				Contents. 7	n 2//5/16 1000
Chain of Custody present:	Yes □No	□N/A 1.			
Chain of Custody filled out:	Zfyes □No	□N/A 2.			
Chain of Custody relinquished:	Æfres □No	□n/a 3.			
Sampler name & signature on COC:	⊠Yes □No	□N/A 4,			
Samples arrived within holding time:	□Yes ⊠No	□N/A 5.	BoD	PARTIC	
Short Hold Time analyses (<72hr):	>₽Yes □No	□N/A 6.	BOD		
Rush Turn Around Time requested:	□Yes ÆNo	□N/A 7.			
Sufficient volume:	ØYes □No	□N/A 8.			
Correct containers used:	ZYes □No	□N/A			·
Pace containers used:	ZYes □No	□N/A 9.			
Containers intact:	ZYes □No	□N/A 1().		
Unpreserved 5035A soils frozen w/in 48hrs?	□Yes □No	50N/A 1	l <u>.</u>		
Filtered volume received for dissolved tests?	□Yes □No	⊡ N/A 1:	2.		
Sample labels match COC:	☑Yes □No	□N/A			
Includes date/time/ID/analyses Matrix:	unter	1:	3.		
All containers needing preservation have been checked.	¶Yes □No	□N/A		4	
All containers needing preservation are found to be in compliand with EPA recommendation.	e ∡∏Yes □No	□N/A 1	4.		
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	☑Yes □No		itial when ompleted か		# of added eservative
Trip Blank present:	□Yes □No				
Pace Trip Blank lot # (if purchased):		/	5,		
Headspace in VOA vials (>6mm):	□Yes □No	Æ]N/A			
		′ l ₁	6.		
Project sampled in USDA Regulated Area:	□Yes □No	1 N/A 1	7. List State:		
Additional labels attached to 5035A vials in the field?	□Yes □No	SPN/A 1	8.		
	***************************************	Y / 69	Field Data	Required?	Y / N
Person Contacted:	ate/Time:				
Comments/ Resolution:					
		-		******	
Project Manager Review: 6 for (TDG	2)~	Da	ate:	2	



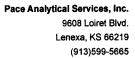
CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately,

Section A Required Client Information:	Section B Required Proje	ct Inform	mation:					Section neces	on C	nation:								_				Pa	ige:			đ		
Company: EarthCon Site Services Inc	Report Ta: Sh	emi Ha	arvey				4	Attenti	on:	Sher	ni Ha	arvey	'		,	-												
Address: 1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: Loi	renzo l	Pittsley (Iorenzow	p3@yaho	o.com)	ſ	Compa	any Na	me:	** **		'as 					RE	GULA	TOR	Y AG	ENC	Y:				***	
Marietta GA 30062	Ali	son Le	vinson (alevinso	n@earthco	on.com)	ľ	Addres	58:									Г	NPD	ES	Γ	GROU	UND	WATE	R [DRINKING	WATER	
Email To: sharvey@earthcon.com	Purchase Orde							Pace Q								***************************************	**********	_	UST		F 1	RCRA	4			OTHER	·	_
Phone: 770-973-2100 Fex 770-973-7395	Project Name:	GW	TS Quart	erly IP-J	oplin		,	Pace P Vanage	roject er:	Trud	y Gi	pson	913	-563-	1405			Sit	e Loc	ation								
Requested Due Date/TAT:	Project Number	Inter	mational	Paper	Joplin, MC	1			rofile #.	2128	Lir	ne 7							ST	ATE:	-	Miss	SOUTE	_				
															Re	que	sted	Ana	ysis	Filter	ed ((/N)		VIII				
Section D Valid Matrix (Required Client Information MATRIX DRINKING WATER	codes	C=COMP)		COLL	ECTED			1		Pres	ervat	ives		Y/N														
DRINING WATER WATER WATER PRODUCT SOIL/SOIL/SOIL/SOIL/SOIL/SOIL/SOIL/SOIL/	MALE COLUMN SEPTION OF TEXTS O	(G=GRAB	COMP STA		COMPO END/G	RAB S	IEMP AT COLLECTION	CONTAINERS	рел					is Test [(270 (Pentachlorophenol & Phenol	мения в примения в при					Residual Chlorine (Y/N)	4	(213.	لا و د	
# #	MATRIX C	SAMPLE	DATE	TIME	DATE	TIME	SAMPLE	# OF CON	Unpreserved	NO.	Na OH	Na ₂ S ₂ O ₃	Methanol	Analysis	gos	TSS Total Zinc	086	8270 (Pentac						Residual			o./ Lab I.D	
1 LAG CARBON EFFLUENT - CO		тс	ત્રુપાર્ટા ક	10,50		11.605	4	2	1	11	_	11			X	x x	4_	lacksquare					1	\perp	1(BPIW)			<u> </u>
2 LAG CARBON EFFLUENT - GR	AB w	T G			2/14/16	11,55	4	6	4	++	2	H	4		\vdash	- -	×	×	\dashv	4		4	_	+	4/ALIV	2/AEI	<i>y</i>	<u> </u>
3					 	╂──╁	\dashv		\vdash	++	+	₩	-		\vdash	+	╁	H	+			+	-	+	· ·			***************************************
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10					i												l.											
11				200			_					Ш											1_					
12				<u></u>			4					Ш	1				1	Щ						Ш				
ADDITIONAL COMMENTS		2.27	SHED BY	0.06748.040.15	760 A	DATE	4	278 (ME		٠,٩	ACC	EPTE	D BY	/ AFF	LIATI	ON	[DA 711-			ME	4		SAMP	E CONDIT	IONS	
	- Zol	eng	r P	<u>ills</u>	ley	2,12/1	6	14.	20	-	1/	#/		-	-#	<u>e</u>			4151	/6	90	4	12	2-6	-7	7_	Υ	
7							1	···········	··········								****											
Page 2				SAMPL	ER NAME A	AND SIGNAT	URI	E	- 1948 - 1945 - 1945 - 1945							:			14 ju				1	ပ္	8	paled (X	itact	
20 of 20					PRINT Nan	e of SAMPLE	R:	40	re	NZ	0	P ale	,T	131			aned	2/	1/2	/,	6		7	Temp in *C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)	

F-ALL-Q-020rev.07, 15

ote: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1,5% per month for a





May 26, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: GWTS Quarterly IP-Joplin

Pace Project No.: 60219057

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on May 13, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Kansas Certification IDs 9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60219057001	LAG CARBON EFFLUENT - COMP	Water	05/12/16 12:25	05/13/16 06:40
60219057002	LAG CARBON EFFLUENT - GRAB	Water	05/12/16 12:25	05/13/16 06:40



SAMPLE ANALYTE COUNT

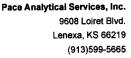
Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60219057001	LAG CARBON EFFLUENT - COMP	EPA 6010	TDS	1
		SM 2540D	JMC1	1
		SM 5210B	AGO	1
60219057002	LAG CARBON EFFLUENT - GRAB	EPA 8270	JMT	8
		EPA 1664A	JMC1	1





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Method:

EPA 6010 Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

May 26, 2016

General Information:

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Method:

EPA 8270 Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

May 26, 2016

General Information:

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

QC Batch: OEXT/54280

S0: Surrogate recovery outside laboratory control limits.

- · LAG CARBON EFFLUENT GRAB (Lab ID: 60219057002)
 - · Nitrobenzene-d5 (S)
- MS (Lab ID: 1759161)
 - · Nitrobenzene-d5 (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

May 26, 2016

General Information:

1 sample was analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Method:

SM 2540D

Description: 2540D Total Suspended Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

May 26, 2016

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

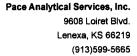
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: WET/61869

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

- DUP (Lab ID: 1760410)
 - Total Suspended Solids
- DUP (Lab ID: 1760411)
 - · Total Suspended Solids

Additional Comments:





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

Method:

SM 5210B Description: 5210B BOD, 5 day

Client:

EarthCon Site Services Inc-International Paper

Date:

May 26, 2016

General Information:

1 sample was analyzed for SM 5210B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with SM 5210B with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

6010 MET ICP

60219057

Sample: LAG CARBON EFFLUENT - COMP

Lab ID: 60219057001

Results

Collected: 05/12/16 12:25

Report Limit

Received: 05/13/16 06:40

Prepared

Matrix: Water

vate:

CAS No.

Parameters

Analytical Method: EPA 6010 Preparation Method: EPA 3010

Zinc

ND mg/L

Units

mg/L

0.050

05/13/16 15:45 05/16/16 12:55 7440-66-6

2540D Total Suspended Solids

Total Suspended Solids

Date: 05/26/2016 08:16 AM

Analytical Method: SM 2540D 53.3 mg/L

5.0

DF

1

05/18/16 07:24

Analyzed

D6

Qual

5210B BOD, 5 day

BOD, 5 day

Analytical Method: SM 5210B Preparation Method: SM 5210B

15.6

2.0

05/13/16 17:59 05/18/16 19:21



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.: 60219057

Date: 05/26/2016 08:16 AM

Sample: LAG CARBON EFFLUENT - GRAB	Lab ID: 602	19057002	Collected: 05/12/1	6 12:2	Received: 05	5/13/16 06:40 N	/latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	nod: EPA 82	70 Preparation Meth	nod: EP	A 3510			
Pentachlorophenol	ND	mg/L	0.011	1	05/16/16 00:00	05/18/16 17:33	87-86-5	
Phenol	ND	mg/L	0.011	1	05/16/16 00:00	05/18/16 17:33	108-95-2	
Surrogates		•						
Nitrobenzene-d5 (S)	109	%	26-105	1	05/16/16 00:00	05/18/16 17:33	4165-60-0	S0
2-Fluorobiphenyl (S)	85	%	24-123	1	05/16/16 00:00	05/18/16 17:33	321-60-8	
Terphenyl-d14 (S)	89	%	43-123	1	05/16/16 00:00	05/18/16 17:33	1718-51-0	
Phenol-d6 (S)	35	%	10-63	1	05/16/16 00:00	05/18/16 17:33	13127-88-3	
2-Fluorophenol (S)	48	%	13-73	1	05/16/16 00:00	05/18/16 17:33	367-12-4	
2,4,6-Tribromophenol (S)	85	%	10-169	1	05/16/16 00:00	05/18/16 17:33	118-79-6	
HEM, Oil and Grease	Analytical Meth	od: EPA 16	64A					
Oil and Grease	ND	mg/L	5.0	1		05/25/16 11:39		





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

QC Batch:

MPRP/35914

Analysis Method:

EPA 6010

QC Batch Method: EPA 3010

Associated Lab Samples: 60219057001 Analysis Description:

Matrix: Water

6010 MET

METHOD BLANK: 1758358 Associated Lab Samples:

60219057001

Parameter

Units

Blank Result Reporting Limit

Qualifiers Analyzed

Zinc

mg/L

ND

0.050 05/16/16 12:28

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Date: 05/26/2016 08:16 AM

1758359

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

80-120

Zinc

Units mg/L

0.98

98

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1758360

MSD

1758361

MS

MSD

% Rec

Max

Units

60218590007 Spike

Spike Conc.

MS Result 0.96

% Rec

% Rec

Zinc

Result mg/L

Conc. ND 1

MS

1

Result 0.96

MSD

96

Limits 95 75-125

RPD RPD

Qual 20



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

QC Batch:

OEXT/54280

Analysis Method:

EPA 8270

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water MSSV

Associated Lab Samples: 60219057002

METHOD BLANK: 1759159

Matrix: Water

Associated Lab Samples: 60219057002

Date: 05/26/2016 08:16 AM

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Pentachlorophenol	mg/L	ND	0.010	05/17/16 08:56	
Phenol	mg/L	ND	0.010	05/17/16 08:56	
2,4,6-Tribromophenol (S)	%	76	10-169	05/17/16 08:56	
2-Fluorobiphenyl (S)	%	73	24-123	05/17/16 08:56	
2-Fluorophenol (S)	%	38	13-73	05/17/16 08:56	
Nitrobenzene-d5 (S)	%	74	26-105	05/17/16 08:56	
Phenol-d6 (S)	%	25	10-63	05/17/16 08:56	
Terphenyl-d14 (S)	%	72	43-123	05/17/16 08:56	

		Spike	LCS	LCS	% Rec	Oali6aa
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Pentachlorophenol	mg/L	.05	0.039	77	58-126	
Phenol	mg/L	.05	0.019	38	15-57	
2,4,6-Tribromophenol (S)	%			83	10-169	
2-Fluorobiphenyl (S)	%			81	24-123	
-Fluorophenol (S)	%			48	13-73	
litrobenzene-d5 (S)	%			83	26-105	
Phenol-d6 (S)	%			35	10-63	
[erphenyl-d14 (S)	%			81	43-123	

MATRIX SPIKE & MATRIX SF	PIKE DUPLICA	TE: 175916	61		1759162							
Parameter	6 Units	0219057002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Pentachlorophenol	mg/L	ND	.052	.052	0.048	0.043	94	84	22-147		20	
Phenol	mg/L	ND	.052	.052	0.017	0.015	33	30	10-49	10	36	
2,4,6-Tribromophenol (S)	%						90	77	10-169		42	
2-Fluorobiphenyl (S)	%						91	78	24-123			
2-Fluorophenol (S)	%						50	45	13-73		30	
Nitrobenzene-d5 (S)	%						124	104	26-105			S0
Phenol-d6 (S)	%						34	31	10-63		34	
Terphenyl-d14 (S)	%						102	87	43-123			



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

QC Batch:

WET/62010

EPA 1664A

Analysis Method:

EPA 1664A

QC Batch Method: Associated Lab Samples:

60219057002

Analysis Description:

1664 HEM, Oil and Grease

METHOD BLANK: 1764908

Matrix: Water

Associated Lab Samples:

60219057002

Blank Result

Reporting Limit

Qualifiers Analyzed

Parameter Oil and Grease

Units mg/L

ND

5.0 05/25/16 11:36

LABORATORY CONTROL SAMPLE:

Parameter

1764909

Spike

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

mg/L

mg/L

Conc. 40

39.7

99

39.4

RPD

MATRIX SPIKE SAMPLE:

1764911

Parameter

60219057002 Units Result

Spike Conc.

ND

MS Result

MS % Rec

78-114

% Rec Limits

78-114

Qualifiers

SAMPLE DUPLICATE: 1764910

Date: 05/26/2016 08:16 AM

Parameter

60219050002 Units Result

ND

Dup Result ND

41.7

Max RPD

Qualifiers

18

91





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

QC Batch:

WET/61869

QC Batch Method: SM 2540D Analysis Method:

SM 2540D

Analysis Description:

2540D Total Suspended Solids

METHOD BLANK: 1760409

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60219057001

60219057001

Parameter

SAMPLE DUPLICATE: 1760410

Parameter

Units

Blank Result Reporting Limit

Qualifiers

Total Suspended Solids

mg/L

ND

05/18/16 07:23

Analyzed

Dup

Max **RPD**

Qualifiers

Total Suspended Solids

Units mg/L

60219057001 Result 53.3

Result 46.7 RPD 13

10 D6

SAMPLE DUPLICATE: 1760411

Total Suspended Solids

Date: 05/26/2016 08:16 AM

Parameter

Units

mg/L

60219083001 Result

Dup Result

RPD

Max **RPD**

Qualifiers

9.0 8.0 12 10 D6





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

QC Batch:

WET/61781

QC Batch Method:

SM 5210B

Analysis Method:

SM 5210B

Analysis Description:

5210B BOD, 5 day

METHOD BLANK: 1758726

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60219057001

60219057001

Blank Result Reporting Limit

Analyzed

Qualifiers

BOD, 5 day

Units mg/L

ND

05/18/16 18:33

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1758727

Spike

LCS Result

LCS % Rec % Rec Limits

Qualifiers

BOD, 5 day

Units mg/L Conc. 198

194

98

85-115

SAMPLE DUPLICATE: 1758728

Date: 05/26/2016 08:16 AM

Parameter Units 60219040001 Result

Dup Result

RPD

Max RPD

Qualifiers

BOD, 5 day

mg/L

92.8

83.7

10

17





QUALIFIERS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60219057

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Date: 05/26/2016 08:16 AM

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

S0 Surrogate recovery outside laboratory control limits.





QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

Date: 05/26/2016 08:16 AM

60219057

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60219057001	LAG CARBON EFFLUENT - COMP	EPA 3010	MPRP/35914	EPA 6010	ICP/26231
60219057002	LAG CARBON EFFLUENT - GRAB	EPA 3510	OEXT/54280	EPA 8270	MSSV/17657
60219057002	LAG CARBON EFFLUENT - GRAB	EPA 1664A	WET/62010		
60219057001	LAG CARBON EFFLUENT - COMP	SM 2540D	WET/61869		
60219057001	LAG CARBON EFFLUENT - COMP	SM 5210B	WET/61781	SM 5210B	WET/61894



Sample Condition Upon Receipt

WO#:60219057

Client Name: Earth wn - IP	Optional
Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client	Proj Due Date:
Tracking #: 8093 901 6865 Pace Shipping Label Used? Yes \(\text{No } \text{Z} \)	Proj Name:
Custody Seal on Cooler/Box Present: Yes No C Seals intact: Yes No C	
Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☐	
Thermometer Used: T-239 //T-262 Type of Ice: Wei) Blue None Samples received on ice	ce, cooling process has begun.
	of person examining
Temperature should be above freezing to 6°C	5/13/16
Chain of Custody present: AYes ONO ON/A 1.	
Chain of Custody filled out: ☐Yes ☐No ☐N/A 2.	
Chain of Custody relinquished: ☐Yes ☐No ☐N/A 3.	
Sampler name & signature on COC:	
Samples arrived within holding time:	·
Short Hold Time analyses (<72hr):	
Rush Turn Around Time requested:	
Sufficient volume: DYes DNo DN/A 8.	
Correct containers used:	
Pace containers used:	
Containers intact:	
Unpreserved 5035A soils frozen w/in 48hrs?	
Filtered volume received for dissolved tests?	
Sample labels match COC: A Tayes No N/A	
Includes date/time/ID/analyses / Matrix: 13.	
All containers needing preservation have been checked.	
All containers needing preservation are found to be in compliance Yes No No N/A 14.	
Franchises: VOA Californ OSC W/ DRO (victor) Initial when Lot # 0	of added rvative
Trip Blank present:	IVALIVE
Pace Trip Blank lot # (if purchased):15.	
Headspace in VOA vials (>6mm): □Yes □No □N/A	
16.	
Project sampled in USDA Regulated Area:	
Additional labels attached to 5035A vials in the field?	
	/ N
Person Contacted: Date/Time:	
Comments/ Resolution;	
Project Manager Review: 2018 Date: 5-13-16	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	I Client Information:	Section B Required Proje	******					١٢	voice	on C • Inform												P	age:		(xf		**
Company		Report To: She							ttenti			emî h	larve	y								27.3	VI				. 600000	
Address:	1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: Lor		• `						any Nai	TIG:					·····				ULATO	(C. 170) 190	GEN	CY	2		***	4.5	
	Marietta GA 30062			vinson (a	alevinsor	@earthco	n.com)		ddres				<u> </u>	***************************************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	***************************************			П	NPDES	F	GRO	UND	WATE			G WATE	R
Email To	-,-	Purchase Order						R	ace C eferer	nce:									Γ	UST		RCR	A			OTHER		
	770-973-2100 Fax 770-973-7395	Project Name:		TS Quart				и	ace P lanage	er.		-	<u> </u>	913	3-563	-1405	j		Site	Location	>n	Mis	souri					
Request	ed Due Date/TAT:	Project Number	Inte	mational I	Paper - J	oplin, MO		ľ	ace P	rofile #:	212	28 L	ine 7							STAT				_				
		ų.														Re	eques	ted .	Anal	/sis Fill	ered	(Y/N)						
	Section D Valid Matrix C Required Client Information MATRIX	codes g	C=COMP)		COLL	ECTED			:		Pre:	serva	atives		I N													
-	DRINKING WATER WATER WASTE WATER PRODUCT SOLUSOLIO OIL WIPE AR	CODE DW WY WW P St. OWP AR	(G=G	COMPC STAF		COMPOS ENDIGR	SITE AB	AT COLLECTION	JERS						Test				270 (Pentachiorophenol & Phenol)					orine (Y/N)				·.
TEM #	(A-Z, 0-97,-) OTHER Sample IDs MUST BE UNIQUE TASSUE	ਰ ਹੈ ਤੇ MATRIX CODE	SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAINERS	Unpreserved H ₂ SO ₂	HNO3	HCI	Na ₂ S ₂ O ₃	Methanol	lysis	800	TSS Total Zinc	୦୫୦	9270 (Pentachioro					Residual Chlorine (Y/N)	(QO)	Project	No./ Lat	
1	LAG CARBON EFFLUENT - CO	MP w	гс	5/11/16	10:20	5/12/16	1235		2	1	1					х	x x								BPIN I	593N	20	W
2	LAG CARBON EFFLUENT - GR	AB w	r G			5/12/16	12:25		6	4		2		Ш				x	х					Ш	ZAGIA	1 4	4G/U	as
3											Ш			Ш		Ш									The second	**************************************		
4					<u> </u>			_						1	1	Ш				44		$\bot \bot$		lacksquare				
5			1	:				4			$\downarrow \downarrow$		4	Ш	4	Щ		<u> </u>	11		_	↓ ↓↓	4	11				
6								_			4-1			igwdapper	48	$\vdash \vdash$	4	4_	\sqcup		_	44	1	1			436	
7					<u> </u>			+		-	+-		-	\vdash	4	\vdash	-	+	\vdash		-	++	4	+		······		
8			-			:		\dashv			+		+	\vdash	4	\vdash	+	+	┼┼	-	+	++	+	+				
9 10	: : : : : : : : : : : : : : : : : : :		+	_				\dashv	9277 14	\vdash	+		+	${\mathbb H}$	4	\vdash	+	╁	+	++	+	++	+	╂╂	· 			
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12					 			1		H			+	H	1	H		+	\Box	+	+	$\dagger \dagger$	+	T	,i-		·····	· · · · · · · · · · · · · · · · · · ·
	ADDITIONAL COMMENTS	RE	LINQU	SHED BY /	AFFILIAT	ON	DATE	T	ገ	IME			AC	CEPT	ED BY	/AFF	ILIATK	ON .		DATE		TIME	İ		SAMPI	E CONDI	TIONS	
PH	CALIBRAT 5/14/16	200	wy	~ P	Hol	irg	5/12/	16	15	100	7		Z.	B	1		h			JB	0	640	12,	9	7	Y	4	***************************************
PH	6.46				Ta T	/			Ĭ.,								/ /			1								
		- *;^ 						\Box		, , ,	-		33										-		: : :			
	Ta a a a a a a a a a a a a a a a a a a	<u> </u>			SAMPL	ER NAME 4	ND SIGNA	TURE										7 - 48 2 - 48					-	,	Ę	₽ ÷	1	ž
	20 of 20					PRINT Nam	y			Or	01	1 -	O	P	tte	1e	V				opported i	da grad organi	1	Temp in °C	S (N)	y Seale	1	i 8 €
	f 20					SIGNATUR				ener.						DA (M	TE Sig	ned YY): /	51	12.	116	7	1	Tem	Received of Ice (Y/N)	Custody (Some	(N/X)





September 14, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: GWTS Quarterly IP-Joplin

Pace Project No.: 60226790

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on September 01, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

REPORT OF LABORATORY ANALYSIS





SAMPLE SUMMARY

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60226790001	LAG CARBON EFFLUENT - COMP	Water	08/31/16 11:30	09/01/16 07:00
60226790002	LAG CARBON EFFLUENT - GRAB	Water	08/31/16 11:30	09/01/16 07:00



SAMPLE ANALYTE COUNT

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60226790001	LAG CARBON EFFLUENT - COMP	EPA 6010	JGP	1
		SM 2540D	JSS	1
		SM 5210B	HAC	1
60226790002	LAG CARBON EFFLUENT - GRAB	EPA 8270	JMT	8
		EPA 1664A	AGO	1



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method:

EPA 6010 Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

September 14, 2016

General Information:

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method:

EPA 8270

Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

September 14, 2016

General Information:

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 445415

S0: Surrogate recovery outside laboratory control limits.

- MS (Lab ID: 1821163)
 - · Nitrobenzene-d5 (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226802001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1821163)
 - Pentachlorophenol
- MSD (Lab ID: 1821164)
 - · Pentachlorophenol

REPORT OF LABORATORY ANALYSIS





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method: EPA 8270

Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

September 14, 2016



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

September 14, 2016

General Information:

1 sample was analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 446165

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226790002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MS (Lab ID: 1824147)

· Oil and Grease

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method:

SM 2540D

Description: 2540D Total Suspended Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

September 14, 2016

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

Method:

SM 5210B

Client:

Description: 5210B BOD, 5 day EarthCon Site Services Inc-International Paper

Date:

September 14, 2016

General Information:

1 sample was analyzed for SM 5210B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with SM 5210B with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 445035

B2: Oxygen usage is less than 2.0 for all dilutions set. The reported value is an estimated less than value and is calculated for the dilution using the most amount of sample.

• DUP (Lab ID: 1819497)

· BOD, 5 day

This data package has been reviewed for quality and completeness and is approved for release.





ANALYTICAL RESULTS

Project:

BOD, 5 day

GWTS Quarterly IP-Joplin

10.2

mg/L

Pace Project No.:

60226790

Sample: LAG CARBON EFFLUENT - COMP	Lab ID:	60226790001	Collected: 08/31/	16 11:30	Received: 09)/01/16 07:00 I	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
6010 MET ICP	Analytical	Method: EPA 60	10 Preparation Met	hod: EP/	A 3010			
Zinc	N	D mg/L	0.050	1	09/01/16 10:30	09/01/16 16:23	7440-66-6	
2540D Total Suspended Solids	Analytical	Method: SM 254	40D					
Total Suspended Solids	25.	.0 mg/L	5.0	1		09/06/16 13:53	3	
5210B BOD, 5 day	Analytical	Method: SM 52	10B Preparation Me	thod: SN	1 5210B			

2.0

09/01/16 15:40 09/06/16 09:54



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

Date: 09/14/2016 02:37 PM

60226790

Sample:	LAG CARBON	EFFLUENT -
	GRAB	

Lab ID: 60226790002

Collected: 08/31/16 11:30 Received: 09/01/16 07:00 Matrix: Water

GRAB								
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meti	nod: EPA 8270	Preparation Meth	nod: EP	A 3510			
Pentachiorophenol	0.017	mg/L	0.010	1	09/06/16 00:00	09/09/16 21:10	87-86-5	
Phenol	0.034	mg/L	0.010	1	09/06/16 00:00	09/09/16 21:10	108-95-2	
Surrogates								
Nitrobenzene-d5 (S)	65	%	26-105	1	09/06/16 00:00	09/09/16 21:10	4165-60-0	
2-Fluorobiphenyl (S)	62	%	24-123	1	09/06/16 00:00	09/09/16 21:10	321-60-8	
Terphenyl-d14 (S)	61	%	43-123	1	09/06/16 00:00	09/09/16 21:10	1718-51-0	
Phenol-d6 (S)	26	%	10-63	1	09/06/16 00:00	09/09/16 21:10	13127-88-3	
2-Fluorophenol (S)	39	%	13-73	1	09/06/16 00:00	09/09/16 21:10	367-12-4	
2,4,6-Tribromophenol (S)	69	%	10-169	1	09/06/16 00:00	09/09/16 21:10	118-79-6	
HEM, Oil and Grease	Analytical Meth	nod: EPA 1664	A					
Oil and Grease	ND	mg/L	5.0	1		09/13/16 08:43		M1



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

QC Batch:

445027

EPA 3010

Analysis Method:

EPA 6010

60226790001 Associated Lab Samples:

Analysis Description:

6010 MET

METHOD BLANK: 1819432

QC Batch Method:

Matrix: Water

Associated Lab Samples:

60226790001

Blank

Reporting

Parameter

Result

Limit

Qualifiers

Zinc

Units

ND

0.050 09/01/16 15:28

Analyzed

LABORATORY CONTROL SAMPLE:

Parameter

1819433

mg/L

Units

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc

mg/L

Units

mg/L

1.0

102

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1819434

MSD

1819435 MS

MSD

MSD

98

% Rec

Max RPD RPD

Parameter

60226671001

Spike Conc.

MS

Spike Conc.

Result 0.98 % Rec

Limits

Zinc

Result

ND

1 1

Result 0.98 % Rec

MS

75-125

Qual 0 20



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

QC Batch:

445415

Analysis Method:

EPA 8270

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water MSSV

Associated Lab Samples:

METHOD BLANK: 1821161

60226790002

Matrix: Water

Associated Lab Samples: 60226790002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Pentachlorophenol	mg/L	ND	0.010	09/07/16 09:00	
Phenol	mg/L	ND	0.010	09/07/16 09:00	
2,4,6-Tribromophenol (S)	%	81	10-169	09/07/16 09:00	
2-Fluorobiphenyl (S)	%	74	24-123	09/07/16 09:00	
2-Fluorophenol (S)	%	45	13-73	09/07/16 09:00	
Nitrobenzene-d5 (S)	%	75	26-105	09/07/16 09:00	
Phenol-d6 (S)	%	29	10-63	09/07/16 09:00	
Terphenyl-d14 (S)	%	77	43-123	09/07/16 09:00	

LABORATORY CONTROL SAMPLE:	1821162					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Pentachlorophenol	mg/L	.05	0.038	76	58-126	
Phenol	mg/L	.05	0.016	33	15-57	
2,4,6-Tribromophenol (S)	%			86	10-169	
2-Fluorobiphenyl (S)	%			80	24-123	
2-Fluorophenol (S)	%			47	13-73	
Nitrobenzene-d5 (S)	%			81	26-105	
Phenol-d6 (S)	%			30	10-63	
Terphenyl-d14 (S)	%			83	43-123	

MATRIX SPIKE & MATRIX SE	PIKE DUPLIC	ATE: 182116	33		1821164							
Parameter	Units	60226802001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Pentachlorophenol	mg/L	0.81	.051	.05	0.063	0.054	-1470	-1520	22-147	16	20	M1
Phenol	mg/L	ND	.051	.05	0.021	0.017	41	35	10-49	18	36	
2,4,6-Tribromophenol (S)	%						86	78	10-169		42	
2-Fluorobiphenyl (S)	%						82	73	24-123			
2-Fluorophenol (S)	%						49	43	13-73		30	
Nitrobenzene-d5 (S)	%						106	99	26-105			S0
Phenol-d6 (S)	%						31	28	10-63		34	
Terphenyl-d14 (S)	%						81	76	43-123		_	



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

QC Batch:

446165

QC Batch Method:

EPA 1664A

Analysis Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples: METHOD BLANK: 1824145

60226790002

Matrix: Water

Associated Lab Samples:

60226790002

Blank Result

Reporting Limit

Analyzed

Qualifiers

Oil and Grease

Units mg/L

ND

5.0 09/13/16 08:42

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1824146

Spike

LCS

LCS

% Rec

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

mg/L

Conc. 40 Result

% Rec 85 Limits 78-114 Qualifiers

MATRIX SPIKE SAMPLE:

1824147

Parameter Units 60226790002 Result

Spike Conc.

40.8

34.1

MS Result

33.4

MS % Rec

77

18

% Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1824148

Parameter

60226878002 Units Result

mg/L

ND

ND

Dup Result RPD ND

Max RPD

Qualifiers

78-114 M1

Date: 09/14/2016 02:37 PM





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

QC Batch:

QC Batch Method:

445463

SM 2540D

60226790001

Analysis Method:

SM 2540D

Analysis Description:

2540D Total Suspended Solids

METHOD BLANK: 1821227

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60226790001

Blank Result Reporting Limit

Analyzed

Qualifiers

Total Suspended Solids

Parameter

Units mg/L

Units

mg/L

ND

09/06/16 13:50

SAMPLE DUPLICATE: 1821228

Parameter

60226784001 Result

Dup Result

RPD

Max **RPD**

10

Qualifiers

SAMPLE DUPLICATE: 1821229

Total Suspended Solids

Total Suspended Solids

Parameter

60226829001 Result

Dup Result RPD

Max **RPD**

Qualifiers

Units mg/L

46.0

ND

44.0

ND

10



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

QC Batch:

445035

Analysis Method:

SM 5210B

QC Batch Method:

SM 5210B Associated Lab Samples:

Analysis Description:

5210B BOD, 5 day

60226790001

METHOD BLANK: 1819495

Matrix: Water

Associated Lab Samples:

60226790001

Blank Result

Reporting Limit

Qualifiers Analyzed

BOD, 5 day

Units mg/L

ND

2.0 09/06/16 09:05

LABORATORY CONTROL SAMPLE:

Parameter

1819496

Spike

LCS

LCS % Rec % Rec

BOD, 5 day

Units mg/L Conc. 198 Result 196

99

Limits Qualifiers

SAMPLE DUPLICATE: 1819497

Date: 09/14/2016 02:37 PM

Parameter

Parameter

Units

60226751001 Result

4.3

Dup Result RPD

Max RPD

85-115

Qualifiers

BOD, 5 day

mg/L

4.2

3

17 B2





QUALIFIERS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60226790

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Date: 09/14/2016 02:37 PM

B2	Oxygen usage is less than 2.0 for all dilutions set.	The reported value is an estimated less than value and is calculated
	for the dilution using the most amount of sample.	

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

S0 Surrogate recovery outside laboratory control limits.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.: 60226790

Date: 09/14/2016 02:37 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60226790001	LAG CARBON EFFLUENT - COMP	EPA 3010	445027	EPA 6010	445092
60226790002	LAG CARBON EFFLUENT - GRAB	EPA 3510	445415	EPA 8270	445572
60226790002	LAG CARBON EFFLUENT - GRAB	EPA 1664A	446165		
60226790001	LAG CARBON EFFLUENT - COMP	SM 2540D	445463		
60226790001	LAG CARBON EFFLUENT - COMP	SM 5210B	445035	SM 5210B	445430



Sample Condition Upon Receipt



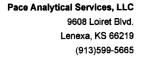
Earth con-Ip		***************************************	144	
Client Name: (Premo)			, ,	
Courier: FedEx Z UPS UPS UIA Clay P	EX CI ECI CI	Pace 🗆 Xroads	s ☐ Client ☐ Other ☐]
Fracking #: 7839 7/86 8067 Pace	Shipping Label Used	? Yes □ No	₹	
Custody Seal on Cooler/Box Present: Yes∕☐ No □	Seals intact: Yes	No □		
Packing Material: Bub6le Wrap ☐ Bubble Bags	,	None □	Other 🗆	
realt) ce at	Ice: Wet Blue Non	е		
Cooler Temperature (°C): As-read 0.9 Corr. Facto	or CF-0.1 Correcte	nd 2-0	Date and initials of examining contents	•
Temperature should be above freezing to 6°C			209/1/16	
	Yes ONO ON/A			
Chain of Custody present:	/.			
Chain of Custody relinquished:	ZYes □No □N/A			
Samples arrived within holding time:	ZYes No N/A		***************************************	
Short Hold Time analyses (<72hr):	Yes ONO ON/A	BOD		
Rush Turn Around Time requested:	□Yes □No □N/A			
Sufficient volume:	Yes ONO ON/A			
Correct containers used:	Yes ONO ON/A	<u> </u>		
Pace containers used:	ØYes □No □N/A			
Containers intact:	ZYes □No □N/A			
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ØN/A			
Filtered volume received for dissolved tests?	□Yes □No ☑N/A			
Sample labels match COC: Date / time / ID / analyses	Zyes □No □N/A			
Samples contain multiple phases? Matrix: & T	□Yes ØNo □N/A			
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro O&A, KS TPH, OK-DRO)	ZYes □No □N/A			
Cyanide water sample checks:				
Lead acetate strip turns dark? (Record only)	□Yes □No □Yes □No			
Potassium iodide test strip turns blue/purple? (Preserve)	∐Yes UNg/ * //			
Trip Blank present:	☐Yes ☐No ☑N/A	<u> </u>		
Headspace in VOA vials (>6mm):	□Yes □No ☐N/A			
Samples from USDA Regulated Area: State:	□Yes □No □N/A			
Additional labels attached to 5035A / TX1005 vials in the field	? 🗆 Yes 🗆 No 🔎 N/A			
Client Notification/ Resolution: Copy COC to	Client? Y / 🐯	Field Data Red	quired? Y / N	
Person Contacted: Date/1	Time:	olovolovymanama (
Comments/ Resolution:				
Project Manager Review:	Date): 9/1-1	4	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Require	n A od Client Information:	Section Required		t Infon	mation:						tion (tion:												Page:			of		
Compar	EarthCon Site Services Inc	Report To	She	rri Ha	arvey		* .	<u>.</u>	:	Atter	ntion:	5	Sherr	Har	vey										ļ					
Address	1880 W Oak Pkwy Bidg 100 Ste 106	Copy To:	Lore	enzo	Pittsley (lo	orenzow	vp3@yaho	oo.com)		Com	pany f	Vame					···········		····	1	REGI	JLATO	ORY	AGEN	4CY					7
	Marietta GA 30062		Alis	on Le	evinson (a	levinso	n@earthc	on.com)		Addr	1/55:						*****	···		7	<u> </u>	IPDES	; _[GR	OUND	TAW	ER —	DRINKIN	G WATER	1
Email To	sharvey@earthcon.com	Purchase	Order	No.			*			Pace Refer	2ucte	*****			······································		··········	·······		\neg	r 1	JST.	<i>i</i>	RCI	127		, ,	OTHER		. 1
Phone:	.770-973-2100 Fax: 770-973-7395	Project Na	rne;	GW	TS Quarte	rly IP-J	oplin				Project	1	Trudy	Gips	son	913-5	63-	1405				Locati	on							7
Reques	ted Due Date/TAT:	Project Nu	mber.	Inter	mational P	aper	Joplin, MC)	· ·		Profile	#. 2	2128	Line	7	7.4				-		STAT		Mi	ssoui	î				
		<u>. </u>								٠.			- : -			1		Re	nuest	ed A	nalv			(Y/N	1	<i>V//</i>				A
	Section D. Valid Matrix Conception Demonstrate Control Matrix Control	odes CODE	codes to left)	C≈COMP)		COLL	ECTED					P	resei	vativ	es,		到			- gaz - gaz										
# #	WATER WATER PRODUCT SOLSOUD OIL WIFE AR	WT WWW PP SL OC. WP AR ST	MATRIX CODE (see yalid code:	SAMPLE TYPE (G=GRAB C=C	COMPOS START		CCMPCEND/G	DSITE RAS	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H ₂ SO,	TOT TOT	NaOH	Na ₂ S ₂ O ₃ Methanol	H	Analysis Test	30D	(ptal Zinc)&G	8270 (Pentachioraphenal & Phenol)					Residual Chlorine (Y/N)	GU Z Pace	2 6 7	90 No/Lab I.D.	
1	LAG CARBON EFFLUENT - COM	AP .	WI	С			8/3//16	<u> </u>		2	1		,					x)	-				\top					and the second second second	* 18P14	J,
2	LAG CARBON EFFLUENT - GRA	\B	WT	G				1130		6	4	T	2		1	Ħ	1	1		х	x	11	1	$\dagger \dagger$	1	1	YAGU	2.46/1	y w	
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December 09, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: GWTS Quarterly IP-Joplin

Pace Project No.: 60233199

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Study Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 lowa Certification #: 118 Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60233199001	LAG CARBON EFFLUENT - COMP	Water	11/29/16 13:30	11/30/16 09:25
60233199002	LAG CARBON EFFLUENT - GRAB	Water	11/29/16 13:30	11/30/16 09:25



SAMPLE ANALYTE COUNT

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60233199001	LAG CARBON EFFLUENT - COMP	EPA 6010	JGP	1
		SM 2540D	JSS	1
		SM 5210B	AGO	1
60233199002	LAG CARBON EFFLUENT - GRAB	EPA 8270	JMT	8
		EPA 1664A	CRS	1





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Method:

EPA 6010 Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

December 09, 2016

General Information:

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Method:

EPA 8270

Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

December 09, 2016

General Information:

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

December 09, 2016

General Information:

1 sample was analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Method: SM 2540D

Description: 2540D Total Suspended Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

December 09, 2016

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 457347

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

• DUP (Lab ID: 1872325)

- Total Suspended Solids
- DUP (Lab ID: 1872326)
 - Total Suspended Solids



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

Method:

SM 5210B

Description: 5210B BOD, 5 day

Client:

EarthCon Site Services Inc-International Paper

Date:

December 09, 2016

General Information:

1 sample was analyzed for SM 5210B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with SM 5210B with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

5210B BOD, 5 day

Date: 12/09/2016 03:14 PM

BOD, 5 day

60233199

Sample: LAG CARBON EFFLUENT -Lab ID: 60233199001 Collected: 11/29/16 13:30 Received: 11/30/16 09:25 Matrix: Water COMP Units Report Limit DF Prepared CAS No. **Parameters** Results Analyzed Qual Analytical Method: EPA 6010 Preparation Method: EPA 3010 6010 MET ICP 0.23 0.050 12/05/16 10:10 12/06/16 13:51 7440-66-6 Zinc mg/L Analytical Method: SM 2540D 2540D Total Suspended Solids **Total Suspended Solids** 42.0 mg/L 5.0 12/02/16 09:03

2.0

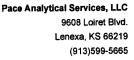
12/01/16 10:03 12/06/16 15:32

Analytical Method: SM 5210B Preparation Method: SM 5210B

mg/L

11.2

REPORT OF LABORATORY ANALYSIS





ANALYTICAL RESULTS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

Date: 12/09/2016 03:14 PM

60233199

Sample: LAG CARBON EFFLUENT - GRAB	Lab ID: 602	33199002 C	Collected: 11/29/1	6 13:30	Received: 11	/30/16 09:25 M	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	nod: EPA 8270	Preparation Meth	nod: EP	A 3510			
Pentachlorophenol	ND	mg/L	0.010	1	12/02/16 00:00	12/05/16 18:54	87-86-5	
Phenol	ND	mg/L	0.010	1	12/02/16 00:00	12/05/16 18:54	108-95-2	
Surrogates		_						
Nitrobenzene-d5 (S)	69	%	26-105	1	12/02/16 00:00	12/05/16 18:54	4165-60-0	
2-Fluorobiphenyl (S)	71	%	24-123	1	12/02/16 00:00	12/05/16 18:54	321-60-8	
Terphenyl-d14 (S)	78	%	43-123	1	12/02/16 00:00	12/05/16 18:54	1718-51-0	
Phenol-d6 (S)	23	%	10-63	1	12/02/16 00:00	12/05/16 18:54	13127-88-3	
2-Fluorophenol (S)	36	%	13-73	1	12/02/16 00:00	12/05/16 18:54	367-12-4	
2,4,6-Tribromophenol (S)	75	%	10-169	1	12/02/16 00:00	12/05/16 18:54	118-79-6	
HEM, Oil and Grease	Analytical Met	nod: EPA 1664	ŀΑ					
Oil and Grease	ND	mg/L	5.0	1		12/08/16 08:07		



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

QC Batch:

QC Batch Method:

457537

EPA 3010

Analysis Method:

EPA 6010

Analysis Description:

6010 MET

METHOD BLANK: 1873413

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60233199001

60233199001

Blank Result Reporting Limit

Analyzed

Qualifiers

Zinc

Units mg/L

ND

0.050 12/06/16 13:40

LABORATORY CONTROL SAMPLE: 1873414

Parameter

Parameter

Units

mg/L

Spike Conc.

LCS Result

LCS % Rec % Rec

Zinc

Zinc

Units mg/L

1.0

102

Limits

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1873416

MSD

MSD

MSD % Rec

80-120

% Rec

Max

RPD RPD Qual

Parameter

Date: 12/09/2016 03:14 PM

Result

762 ug/L

MS 60233417001

Spike Spike Conc. Conc.

MS Result 1.7

Result 1.7

% Rec 92

MS

Limits 75-125

0 20



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

QC Batch:

457319

Analysis Method:

EPA 8270

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water MSSV

Associated Lab Samples:

60233199002

0020010000

METHOD BLANK: 1872203

Associated Lab Samples: 60233199002

Matrix: Water

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Pentachlorophenol	mg/L	ND	0.010	12/05/16 12:44	
Phenol	mg/L	ND	0.010	12/05/16 12:44	
2,4,6-Tribromophenol (S)	%	78	10-169	12/05/16 12:44	
2-Fluorobiphenyl (S)	%	80	24-123	12/05/16 12:44	
2-Fluorophenol (S)	%	43	13-73	12/05/16 12:44	
Nitrobenzene-d5 (S)	%	81	26-105	12/05/16 12:44	
Phenol-d6 (S)	%	27	10-63	12/05/16 12:44	
Terphenyl-d14 (S)	%	79	43-123	12/05/16 12:44	

LABORATORY CONTROL SAMPLE:	1872204	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Pentachlorophenol	mg/L	.05	0.045	90	58-126	
Phenol	mg/L	.05	0.016	31	15-57	
2.4.6-Tribromophenol (S)	%			85	10-169	
2-Fluorobiphenyl (S)	%			84	24-123	
2-Fluorophenol (S)	%			47	13-73	
Nitrobenzene-d5 (S)	%			84	26-105	
Phenol-d6 (S)	%			31	10-63	
Terphenyl-d14 (S)	%			91	43-123	

MATRIX SPIKE & MATRIX SF	PIKE DUPLICA	TE: 187220	05		1872206							
Parameter	6 Units	0233199002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Pentachlorophenol	mg/L	ND	.051	.051	0.040	0.049	79	97	22-147		20	
Phenol	mg/L	ND	.051	.051	0.014	0.017	23	29	10-49	21	36	
2,4,6-Tribromophenol (S)	%						74	88	10-169		42	
2-Fluorobiphenyl (S)	%						71	85	24-123			
2-Fluorophenol (S)	%						35	45	13-73		30	
Nitrobenzene-d5 (S)	%						68	85	26-105			
Phenol-d6 (S)	%						23	29	10-63		34	
Terphenyl-d14 (S)	%						76	90	43-123			



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

QC Batch:

458004

EPA 1664A

Analysis Method:

EPA 1664A

QC Batch Method:

Parameter

Parameter

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

60233199002

Matrix: Water

METHOD BLANK: 1874914 Associated Lab Samples:

60233199002

Blank

Reporting

Result Limit

Analyzed Qualifiers

Oil and Grease

Units mg/L

ND

5.0 12/08/16 08:06

LABORATORY CONTROL SAMPLE: 1874915

Spike Conc. LCS

LCS

% Rec

Oil and Grease

Oil and Grease

Units mg/L

mg/L

mg/L

40

Result 42.3 % Rec 106 Limits 78-114 Qualifiers

MATRIX SPIKE SAMPLE:

1874917

Parameter Units 60233199002 Result

Spike Conc.

40.4

5.7

MS Result

36.1

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1874916

Date: 12/09/2016 03:14 PM

Parameter Oil and Grease

60233230001 Units Result

Dup Result

ND

ND

RPD

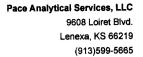
Max RPD

82

18

Qualifiers

78-114





Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

QC Batch: QC Batch Method: 457347

SM 2540D

Analysis Method:

SM 2540D

Analysis Description:

2540D Total Suspended Solids

Associated Lab Samples:

60233199001

Matrix: Water

METHOD BLANK: 1872324 Associated Lab Samples:

60233199001

Blank

Reporting Limit

Parameter

Units

Result

Analyzed

Qualifiers

Total Suspended Solids

mg/L

Units

ND

5.0 12/02/16 08:59

SAMPLE DUPLICATE: 1872325

60233179001 Result

Dup Result

RPD

Max RPD

Qualifiers

Total Suspended Solids

mg/L

21.0

15.0

33

10 D6

SAMPLE DUPLICATE: 1872326

Date: 12/09/2016 03:14 PM

Parameter

Parameter

Units

60233221001 Result

Dup Result

RPD

Max RPD

Qualifiers

10 D6 535 605 12 **Total Suspended Solids** mg/L



Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

QC Batch:

457149

QC Batch Method:

SM 5210B

Analysis Method:

SM 5210B

Analysis Description:

5210B BOD, 5 day

Associated Lab Samples:

60233199001

Matrix: Water

METHOD BLANK: 1871420 Associated Lab Samples:

60233199001

Blank

Reporting

Analyzed

Qualifiers

BOD, 5 day

Units mg/L Result ND Limit

2.0 12/06/16 15:17

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1871421

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

BOD, 5 day

Units mg/L

198

217

110

85-115

SAMPLE DUPLICATE: 1871422

Date: 12/09/2016 03:14 PM

Parameter Units

60233206002 Result

Dup Result

RPD

Max RPD

Qualifiers

BOD, 5 day

735 mg/L 809 10 17





QUALIFIERS

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

60233199

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Date: 12/09/2016 03:14 PM

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

GWTS Quarterly IP-Joplin

Pace Project No.:

Date: 12/09/2016 03:14 PM

60233199

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60233199001	LAG CARBON EFFLUENT - COMP	EPA 3010	457537	EPA 6010	457615
60233199002	LAG CARBON EFFLUENT - GRAB	EPA 3510	457319	EPA 8270	457578
60233199002	LAG CARBON EFFLUENT - GRAB	EPA 1664A	458004		
60233199001	LAG CARBON EFFLUENT - COMP	SM 2540D	457347		
60233199001	LAG CARBON EFFLUENT - COMP	SM 5210B	457149	SM 5210B	457868



Sample Condition Upon Receipt



Client Name: <u>Farthlin</u> / Int. Paper			
Courier: FedEx	PEX 🗆 ECI 🗆	Pace □ Xroads □ 0	Client □ Other □
Tracking #: 2044 6653 2682 Page	ce Shipping Label Used	? Yes □ No,83	
Custody Seal on Cooler/Box Present: Yes 🔊 No 🗆	Seals intact: Yes.∕≅	P No □	
Packing Material: Bubble Wrap Bubble Bags I	□ Foam □	None □ Othe	er 🗆
Thermometer Used: (T-266 / T-239 Type o	fice: (Vet) Blue Nor	ne	
Cooler Temperature (°C): As-read 2.4 Corr. Fact	tor CF +0.7 CF -0.5 Correct	ed <u>3·1</u>	Date and initials of person A
Temperature should be above freezing to 6°C			
Chain of Custody present:	- ✓ Yes □No □N/A		
Chain of Custody relinquished:	12/Yes □No □N/A		
Samples arrived within holding time:	ZŽYes □No □N/A		
Short Hold Time analyses (<72hr):	→EYes □No □N/A	BOD	
Rush Turn Around Time requested:	Yes ŒNo □N/A		
Sufficient volume:	DerYes ⊡No ⊡N/A		
Correct containers used:	DTYes □No □N/A		
Pace containers used:	ZYes □No □N/A		
Containers intact:) 127Yes □No □N/A		
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No 🖼N/A		
Filtered volume received for dissolved tests?	□Yes □No ÆN/A		
Sample labels match COC: Date / time / ID / analyses	ZYes □No □N/A	Client Listed	comp colletion times
Samples contain multiple phases? Matrix:	□Yes □No ÆN/A	an grado and g	comp colletion times
Containers requiring pH preservation in compliance?	ŻYes □No □N/A	on coc- All	labels read "Izallo @ 1330
(HNO ₃ , H₂SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	/		
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks: ATVA Lead acetate strip turns dark? (Record only)	□Yes □No		
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
	□Yes □No XÍN/A		
Trip Blank present:	□Yes □No ⊅N/A		
Headspace in VOA vials (>6mm):			
Samples from USDA Regulated Area: State:	□Yes □No ZN/A		
Additional labels attached to 5035A / TX1005 vials in the field			
Client Notification/ Resolution: Copy COC	9	Field Data Required?	Y / N
Person Contacted: Date:	/Time:		
Comments/ Resolution:			
Project Manager Review:	Dat	e: 11-30-16	



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:	Section B Required Pro						Invoi	tion C ce Inform	nation:											Page	×		of		
Company: EarthCon Site Services Inc	Report To: S	Sherri F	larvey				Atter	ition:	She	ті На	rvey										10		LŻW.		
Address: 1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: L	orenzo	Pittsley (lorenzow	p3@yahoo	o.com)	Com	pany Nar	ne.				B.			RI	EGULA	TOR	Y AGE	ENCY					
Marietta GA 30062	A	Nison I	evinson (alevinsor	@earthco	n.com)	Addir	ess:		er ege			3000 (d)			T	NPD	ES	- G	ROUN	ID WA	TER (n D	RINKING \	NATER
Email To: sharvey@earthcon.com	Purchase Ord	der No.:					Pace Refer	Quote ence:									UST		R	CRA			0.	THER	
Phone: 770-973-2100 Fax: 770-973-7395	Project Name	₹ GV	VTS Quart	erly IP-Jo	plin		Pace Mana	Project	Truc	ly Gip	son	913-	563-1	405		s	ite Loc	ation		1.2	金宝	V///			
Requested Due Date/TAT:	Project Numb	er: Int	emational	Paper J	oplin, MO			Profile #:	2128	3 Line	e 7				100	1	S7	ATE:		Visso	ıri 🦠				
		···					22-10/41-2			U F	7 81			Req	ueste	d An	alysis	Filter	ed (Y/	N)	70	<i>illilli</i>	m		
Section D Valid Matrix C Required Client Information MATRIX	CODE	MP)		COLL	ECTED				Pres	ervati	ves		1 N / A			T									
SAMPLE ID (A-Z, 0-9 /,-) Semple IDs MUST BE UNIQUE ** ** ** ** ** ** ** ** **	AR CIT TS	MATRIX CODE (see veild codes to left) SAMPLE TYPE (G=GRAB C=COMP)	STA		COMPOS ENDIGR DATE		SAMPLE TEMP AT COLLECTION # OF CONTAINERS	Unpreserved H-SO,	HNO	NaOH	Na ₂ S ₂ O ₃	Melnanoi Other	Analysis Test	SST ST	Total Zinc	O&G 8270 (Pentachlorophenol & Phenol)					Residual Chlorine (Y/N)		ace P	7 <i>331</i> 9	o./ Lab I.D.
1 LAG CARBON EFFLUENT - COI	MP	wr c			752.54	1430:	2	1	1					хх	х	7 6						10	BPM)	(REBN)	us al
2 LAG CARBON EFFLUENT - GR	AB	wī e	1/2.84	1330	11.24/16	7 39 0.	6	4	11	2						x x						4/A	em)	2 CREM) cs
											П							al I				17			
**	unia) (ku li a					47.																			
# 						TANKE P														o e					
	San Say		1														2 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
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100												$oldsymbol{ol}}}}}}}}}}}}}}}}}}$			$\perp \perp$		11								
ADDITIONAL COMMENTS		RELINC	UISHED BY	AFFILIAT	ION	DATE		TIME	1		ACC	EPTE	D BY /	AFFIL	ATION		D/	ATE	TI	ME		5	5AMPLI	CONDITIO	ONS
		\$ 78.44	1985 - 1 1	A JOKE	<u> </u>	11/29/	6 19	06			W/	X	m/	(bo	-		11/2.	ghu	74	5	3.1	4	4	4	7_
									+		· · ·	<u>.</u>		4.7 				का सुन्धी। जन्म							
7					****		+															1	\exists		
Page 20 of			Mileto III	SAMPL	ER NAME	AND SIGNA	TURE														J	া		¥2	
ge 20 (FF) (6,5)					PRINT Nan	e of SAMPL	ER:		Al s	c 6	7.	743	12	V.				Á	15.4		Temp in °C	y pay	E	y Sealed ar (Y/N)	E (X
of 20						E of SAMPL		1776 s.		ſ.	3500			DATI	E Signe		0.8	2 7	111)	Tem	Received o	3	Cooler	Samples in (Y/N)

Appendix C Groundwater Treatment System Logs

Operator Name: Loren 30 Pittsley

		Pre	Pressure Readings (psi)					
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
1/1/10	10:05					_	16	22897992
1/8/16	10:40	,					metar	_
1/12/16	9:40		repl.	aced	meter			00000
1/14/16	16:00						17	30284
1/22/16	11:30						18	131367
1/29/16	11:05						18	210384
	·-		·					
								`

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Repairs/Other Maintenance/ Other Ol	oservations:	
2		
Backwash Mon	/ Wed / Fri	using 2000-3000 gal.
Backwash Mon potable wa	ter.	3
·		
	·	

"I certify that the above information is true a	and accurate to the best of my knowledge."	· · · · · · · · · · · · · · · · · · ·
Signature: Colonia I discu	4	
<i>O</i>		

Operator Name: Lovenzo Pittsley

		Pro	essure Re	adings (psi)			
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
2/5/16	09:58	20	18				18	345359
2/12/16	13:55	30	20			6.48	18	453827 561869. 661785
2/19/16	10:20	32	20				18	561869
2/26	12:00	30	22		ļ		16	661785
	-							

Sand Filter Backwash:										
Date/Start Time:	End Time	Backwash Discharge Volume (gal):								
Date/Start Time:	_ End Time	Backwash Discharge Volume (gal):								
Date/Start Time:	_ End Time	Backwash Discharge Volume (gal):								
Date/Start Time:	End Time	Backwash Discharge Volume (gal):								
Date/Start Time:	_ End Time	Backwash Discharge Volume (gal):								
Repairs/Other Maintenance/ Other Observations:										
Had to snake se	werline	062								
changed bas filter	- 2/3/16									
backwashed Mc	on/wed/Fr	7' using 21000-31000 gal								
potable wa	ter	3								

"I certify that the above inform	nation is true and	accurate to the best of my	knowledge."	
	_ (ω	,	
Signature: Lucenzo	Pittsley	1		
$\boldsymbol{\sigma}$				

Operator Name: Lovenzo Pittsley

		Pre	essure Re	adings (psi)			
Date	Time	Sand Filter	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
3/4/16	13:45	25	16				17	\$58601
3/11/16	/3:30	27	18				16	\$58601 904065
3/17/16	08:15	28	20	·			18	1030907
3/24/16	10:20	29	24				15	1155554

Sand Filter Backw	ash:
Date/Start Time:	End Time Backwash Discharge Volume (gal):
Date/Start Time:	End Time Backwash Discharge Volume (gal):
Date/Start Time:	End Time Backwash Discharge Volume (gal):
Date/Start Time:	End Time Backwash Discharge Volume (gal):
Date/Start Time:	End Time Backwash Discharge Volume (gal):
	ntenance/Other Observations: wash on Mondays, Wednesdays and idays using 2000 to 3000 gallons of table water.

"I certify tha	at the above info	mation is true and a	ccurate to the best of my know	rledge."	
	1	a de		···	
Signature:	dureno	Pettsee			

Operator Name: Lovenzo P: Hsley

		Pro	Pressure Readings (psi)					
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
4/1/16	11 40	20	18				18	1303123
4/8/16	0835	20	19				18	1433033
4/15/16	0955	22	17			_	18	1554400
4/22/16	0725	20	17				18	1617719
	0620	18	16				18	1749012
		,						
						4		
				-		**		

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gai):
Repairs/Other Maintenance/ Other Ob	servations:	
Well turned off	4/18/16 /	- mainknance.
	•	4/6, 4/8, 4/11, 4/13, 4/15,
4/18, 4/20, 4/22	, 4/25	4/27 and 4/29

"I certify that t	he above info	rmation is true	and accura	te to the be	st of my knowle	dge."		
Signature:	28						N.	

Operator Name: Lorenzo Pittsley

		Pressure Readings (psi)						
Date	Time	Sand Filter in	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
5/6/16	12:00	20	18				17	1,821,771
5/13/16	08:50.	24	16		,	6,46	14	195 3,595
5/20/16	14:40	20	18			•	17	2051653
5/27/16	9:30	22	17				14	2051653
			···	w-:				
			77					
	!							

Sand Filter Backwa	ash:			
Date/Start Time:		End Time	Backwash Discharge	Volume (gal):
Date/Start Time:		End Time	Backwash Discharge	Volume (gal):
Date/Start Time:		End Time	Backwash Discharge	Volume (gal):
Date/Start Time:		End Time	Backwash Discharge	Volume (gal):
Date/Start Time:		End Time	Backwash Discharge	Volume (gal):
Repairs/Other Mair	ntenance/ Other Ob	servations:		
Backwa	shed ever	Monda	in Wednesday	and Inday
3.	000 to 610	00 gali	y, wednesday,	bac files
		0		3

"I certify tha	t the above information is true and accurate to the best of my knowledge."	
Signature:	2,P. ~	

Operator Name: Lovenzo Pitkley

		Pressure Readings (psi)						
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
6/3/16		syster	n turn	ed off	-			
6/10/16	08:50	22	20				18	2196022
6/17/16	07:30	20	18				18	229782
6/24/16	08:00	24	16				15	2396142
4/1/16	09:00	20	. 17				18	245774D
							-	

Sand Filter Backwash:			,
Date/Start Time:	End Time	Backwash Discharge Volume (gal):	
Date/Start Time:	End Time	Backwash Discharge Volume (gal):	
Date/Start Time:	End Time	Backwash Discharge Volume (gal):	
Date/Start Time:	End Time	Backwash Discharge Volume (gal):	
Date/Start Time:	End Time	Backwash Discharge Volume (gal):	
Repairs/Other Maintenance	d Other Observations:		
		•	

"I certify that the above information is true and accurate to the best of my knowledge."	
$I \longrightarrow A L$	
$\int \int d^{2}$	
Signature: A	

Operator Name: Lorenzo P. Hsley

		Pr	essure Re	adings (psi)			
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
7/1/10								
7/8/16	11:00	20	15				75	2559,766
7/15/16	09:13	24	20				18	2652476
	09:22	21	20				17	2,749,049
7/29/10	11:31	22	20				18	2,842,508
. ,								
	7							
		er a						Marine Company

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Repairs/Other Maintenance/ Other Backwashed on		s, Wednesdays and Fridays 6,000 gallons
approximately	3,000-	6,000 gallons

"I certify that the above information is true and accurate to the best of my knowledge."	
$\mathcal{A}\mathcal{O}$	•
Signature: X	
Olginature.	

Operator Name: Lovenzo Pittsley

		Pro	essure Re	adings (psi)			
Date	Time_	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
8/5/16	<i>08:3</i> 0	20	17				17	2,922,118
8/5/16		syste	n dou	in fur	clean	ing		
	09:00	24	18			J	19	3,013,872
8/19/16	10:10	21	18				18	3,096,712
0/25/16	1 -	20	18				18	3,131,017
8/3/16						6.55		
7								
				i				

Sand Filter Backwa	sh:						
Date/Start Time:	End Time	Backwash Discharge Volume (gal):					
Date/Start Time: _	End Time _	Backwash Discharge Volume (gal):					
Date/Start Time:	End Time _	Backwash Discharge Volume (gal):					
Date/Start Time:	End Time	Backwash Discharge Volume (gal):					
Date/Start Time:	End Time	Backwash Discharge Volume (gal):					
	tenance/ Other Observations						
Backwas	hed Mondays.	wednesdays and Fordays					
a contain	nately 3,000-	Wednesdays and Fordays					
- Garage	 						

"I certify that the above information is true and accurate to the best of my knowledge."	
$\mathcal{A}\mathcal{P}$	
Signature: 07	

Operator Name: Luvenia Pittsley

		Pressure Readings (psi)						
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
9/2/16	11:45	24	18				18	3,170,173
9/9/160	13:10	26	17					l l
91/6/16	07:45	25	15					3,256,706
9/23/16	08:30							3,374 504
9/30/16	14:30	20	19					3,439,750
* * * 2 - 17								

Sand Filter Backwash:									
Date/Start Time:	End Time	Backwash Discharge Volume (gal):							
Date/Start Time:	End Time	Backwash Discharge Volume (gal):							
Date/Start Time:	End Time	Backwash Discharge Volume (gal):							
Date/Start Time:	End Time	Backwash Discharge Volume (gal):							
Date/Start Time:	End Time	Backwash Discharge Volume (gal):							
<u> </u>	Repairs/Other Maintenance/ Other Observations:								
approxima	tely 300	wednesdays and Fridays							

"I certify that the above information is true and accurate to the best of my knowledge."		
\mathcal{A}/\mathcal{A}	•	
Signature:	•	
		_

Operator Name:	Corenzo	Pittsley				
		Pressure Readings (psi)				Ī
		Lead	Lag	i '	Flow	l

		Pressure Readings (psi)						
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
10/2/16	11240	15	16				18	352 9472 3625,625
10/28/16		15	17				18	3625625
			•					
Sand Filter I	Backwash:							

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Repairs/Other Maintenance/ Other Ob	servation <u>s:</u> ೪८১	ten off 10/4/16 for GAC
change-out and	filter repl	tem off 10/4/16 for GAC acement (new filke vessels
putin place and	were plu	insed in.
System timed	back or	10/17/16@07:00
		•

"I certify tha	at the above in	formation is true ar	nd accurate to the	best of my knowled	ge."		_
Signature:	SP					ŧ	
						 	

Operator Name: Levenzo Pittsky

		Pressure Réadings (psi)						
Dat e	Time	Sand Filter In	Bag Filter	Lead Carbon Vessel	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
11/4/16	10:30	15	14				18	3,721,125
11/11/16	12:20	15	14				17	3,827,612
11/18/16	14:40	15	14				18	3,878,588
11/25/16	13:50	16	110				18	3,971,919
11/29/16						6.51		
			· .			•		
•••								·
-қатам-жаға			,	•				

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Repairs/Other Maintenance/ Other	Observations:	
Backurshal L	land wed	Fri 3000-6000 gal
	·	
`		

"I certify that	at the above information is true and accurate to the best of my knowledge."	
Signature:		
Signature.		

Operator Name: Lovenzo Pittsley

		Pro	essure Re	adings (psi)			
Date	Time	Sand Filter In	Bag Filter	Lead Carbon Vessei	Lag Carbon Vessel	Effluent pH (S.U.)	Flow Reading (gpm)	Total Reading (gal)
12/2/6	13:40	/5	13				17	4058550
12/9/16	14:30	16	14				IR	4196194
12/16/16	13:30	15	14				_18	4.185.462
12/22/16	'Syst	en to	med	off				
12/31/6	Svst	en tur		off				
/ /								
				,				

Sand Filter Backwash:		
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Date/Start Time:	End Time	Backwash Discharge Volume (gal):
Repairs/Other Maintenance/ Oth	er Observations:	Jed, Fin 3000-6000 gall

"I certify that the	above information is true and accurate to the best of my knowledge."	
	10	
Signature:	4	

Appendix D
Groundwater Extraction Rate Records and Summary

APPENDIX D Summary of 2016 Groundwater Recovery Volumes International Paper - Joplin Facility

		GWTS	Gallons Since Last	Total	Number of Days Since	Minutes Since Last	Average Gallons per
Date	Time	Reading	Reading	Gallons	Last Reading	Reading	Minute
12/31/15	14:50	22,804,484			* 		
01/01/16	10:05	22,897,992	93,508	93,508	0.80	1,155	
01/08/16	10:00	22,918,015	20,023	113,531	7.00	10,085	
01/14/16	16:00	30,284	30,284	143,815	6.24	8,990	
01/22/16	11:30	131,367	101,083	244,898	7.81	11,250	
01/22/10	11:05	210,384	79,017	323,915	6.98	10,055	
January Tota		210,004	323,915	020,010	28.84	41,535	7.8
burraury rota			0_0,010			,	
02/05/16	9:50	345,359	134,975	458,890	6.95	10,005	
02/12/16	13:55	453,827	108,468	567,358	7.17	10,325	
02/19/16	10:20	561,869	108,042	675,400	6.85	9,865	
02/26/16	12:00	661,785	99,916	775,316	7.07	10,180	
February Tot	ais		451,401		28.04	40,375	11.2
03/04/16	13:45	758,601	96,816	872,132	7.07	10,185	
03/11/16	13:30	904,065	145,464	1,017,596	6.99	10,065	
03/17/16	8:15	1,030,907	126,842	1,144,438	5.78	8,325	
03/24/16	10:26	1,155,554	124,647	1,269,085	7.09	10,211	
March Totals		1,100,004	493,769	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	26.93	38,786	12.7
04/01/16	11:00	1,303,123	147,569	1,416,654	8.02	11,554	
04/08/16	11:00	1,433,033	129,910	1,546,564	6.90	9,935	
04/15/16	9:55	1,554,400	121,367	1,667,931	7.06	10,160	
04/22/16	7:25	1,617,719	63,319	1,731,250	6.90	9,930	
04/29/16	6:20	1,749,012	131,293	1,862,543	6.95	10,015	
April Totals			593,458		35.83	51,594	11.5
05/06/16	12:09	1,821,771	72,759	1,935,302	7.24	10,429	
05/13/16	8:50	1,953,595	131,824	2,067,126	6.86	9,881	
05/20/16	14:40	2,051,653	98,058	2,165,184	7.24	10,430	
05/27/16	9:30	2,154,649	102,996	2,268,180	6.78	9,770	
May Totals			405,637		28.13	40,510	10.0
06/10/16	8:50	2,196,022	41,373	2,309,553	13.97	20,120	
06/17/16	7:30	2,190,022	96,760	2,406,313	6.94	10,000	
06/24/16	8:00	2,396,142	103,360	2,509,673	7.02	10,110	
07/01/16	8:00	2,452,741	56,599	2,566,272	7.00	10,080	
June Totals	0.00	2,402,141	298,092	. 2,000,272	34.94	50,310	5.9
						10.000	
07/08/16	11:06	2,559,766	107,025	2,673,297	7.13	10,266	
07/15/16	9:13	2,652,476	92,710	2,766,007	6.92	9,967	
07/22/16	13:20	2,749,049	96,573	2,862,580	7.17	10,327	
07/29/16	11:31	2,842,508	93,459	2,956,039	6.92	9,971	
July Totals			389,767		28.15	40,531	9.6

APPENDIX D Summary of 2016 Groundwater Recovery Volumes (continued) International Paper - Joplin Facility

Date		GWTS Reading	Gallons Since Last Reading	Total Gallons	Number of Days Since Last Reading	Minutes Since Last Reading	Average Gallons per Minute
00/05/40	0.00	0.000.110	79,610	3,035,649	6.87	9,899	
08/05/16	8:30 9:00	2,922,118 3,013,872	91,754	3,127,403	7.02	10,110	
08/12/16			82,840	3,210,243	7.05	10,150	
08/19/16	10:10	3,096,712	34,305	3,244,548	5.83	8,390	
08/25/16	6:00	3,131,017		3,244,340	26.77	38,549	7.5
August Total	S		288,509		20.77	30,348	7.0
09/02/16	11:45	3,170,173	39,156	3,283,704	8.24	11,865	
09/09/16	13:10	3,256,706	86,533	3,370,237	7.06	10,165	
09/16/16	7:45	3,306,123	49,417	3,419,654	6.77	9,755	
09/23/16	8:30	3,374,504	68,381	3,488,035	7.03	10,125	
09/30/16	14:20	3,439,750	65,246	3,553,281	7.24	10,430	
September T	otals	, ,	308,733	1	36.35	52,340	5.9
Custom down	n for oarbo	n change and	upgrade main	tenance			
10/21/16	11:40	3,529,472	89,722	3,643,003	20.89	30,080	
10/21/16	12:30	3,625,625	96,153	3,739,156	7.03	10,130	
October Tota		3,023,023	185,875	. 0,700,100	27.92	40,210	4.6
October 10ta	ai5		100,070			,	
11/04/16	10:30	3,721,125	95,500	3,834,656	6.92	9,960	
11/11/16	12:20	3,827,612	106,487	3,941,143	7.08	10,190	
11/18/16	14:00	3,878,588	50,976	3,992,119	7.07	10,180	
11/25/16	13:50	3,971,919	93,331	4,085,450	6.99	10,070	
November To	otals		346,294	-	21.06	40,400	8.6
System dow	n for unara	ıde maintenan	ce and holiday	V.			
12/02/16	13:40	4,058,550	86,631	4,172,081	6.99	10,070	
12/02/16	14:30	4,096,194	37,644	4,209,725	7.03	10,130	
12/16/16	13:30	4,185,462	89,268	4,298,993	6.96	10,020	
December To		1,100,100	213,543	• ',=,	20.99	30,220	7.1
Site closed f	or holiday.				15.00	21,600	
Reporting Po	eriod Total	s	4,298,993		366	526,960	8.2

Note:

Readings are not always taken at the end of the calendar month. Monthly totals incoporate data from approximate month-end dates.

GWTS - groundwater treatment system

Prepared By: SBH 01/29/2016 Checked By: AGL 2/3/2017

WATER FLOW (WEEKLY)

WEE	VI V		LSP-3		MR-4		LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is o	on Auto		Yes		Yes		Yes		
1/1/16	28		5,169,110		1063,871		\$2138508		22,89,7892
Pump Switch is o	on Auto		Yes		Yes		Yes		
1/18/16	LP		5,173,484		7077,589		2140479		stopped
Pump Switch is o	on Auto		Yes		Yes	1	Yes		
1/14/16	18		6179778		1090884		2143203		30284
Pump Switch is o	on Auto		Yes		Yes		Yes		
1/22/16	LP		\$206437		1156,761		2157406		131,367
Pump Switch is o	on Auto		Yes		Yes		Yes		<i>J</i> ,
11:05	LP		5 226 6371		1206,871		2,121,001		210384
11/2/16	R	e PlA	ced ne	ter	old N	meter	228979	92 NO	2WMe. Ter

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

		1	***	Τ		<u> </u>		r	***************************************
WEE	KLY		LSP-3		MR-4		LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL.
Pump Switch is	on Auto		Yes		Yes		Yes		
2/5/16	Z P	4	6221481	4	1273613	3	2205605	18	345359
Pump Switch is	on Auto		Yes		Yes		Yes		
13:55	LP	4	6 22 7494	4	1332367	3	2231202	18	453827
Pump Switch is	on Auto		Yes		Yes		Yes		
211916 10.20	んク	4	6227671	4	1,399,125	3	2249005	18	561869
Pump Switch is	on Auto		Yes		Yes		Yes		
2/26/16	LP	Н	6227818	4	1442176	3	224900	18	661,785
Pump Switch is	on Auto		Yes		Yes		Yes		
			`						

Cleaned meter 2 Times

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

WEE	KLY		LSP-3		MR-4		LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is on Auto			Yes	4	Yes	3	Yes		(4)
314/16	LP	1	cleand		7501969		2286504	17	758606
Pump Switch is o	n Auto	4	Yes	4	Yes 15-466 784	2 3	Yes		
3111/16	LP		6233718		6228719	~	2308307	16	904065
Pump Switch is c	n Auto	4	Yes	4	Yes	3	Yes		
3/17/16	LP		6280741		1.604389		2333608	18	1030907
Pump Switch is o	n Auto	4	Yes	Ч	Yes	3	Yes		
3/24/16	hp		6331671		1696717		2359708	15	455554
Pump Switch is o	n Auto	4	Yes	4	Yes	3	Yes		

I certify that the above information is true and accurate to the best of my knowledge.

WATER FLOW (WEEKLY)

		MD 4		LSR-8	TOC	ITY SEWER
LSP-3		MR-4	GPM	TOTAL	GPM	TOTAL
GPM TOTAL			3	Yes	18	
Yes			3	2388604	18	1303123
3,5 6,3 6,371	6 7			Yes		
Yes 5	91 4		3	2,414,200	18	143303
				Yes		1 11 -
1 L	76 4		3	2437805	18	155 440
		Yes		Yes		1 4/6
	21 4	1859729	3	2451205	18	161771
17,7		Yes		Yes		1174901
TI CA	31 4	1192206	3 3	2474600	1/8	119101
	GPM TOTAL Yes 3.5 6,3 8,8,71 Yes 3.5 64405 Yes 3.5 6,489,4 Yes 3.5 65177. Yes	GPM TOTAL GPM Yes	GPM TOTAL GPM TOTAL Yes Yes 3.5 6,38,9,716 4 1,72,3628 Yes Yes 3.5 6,440591 4 1,769,295 Yes Yes 3.5 6,489,476 4 1826691 Yes Yes 3.5 6517721 4 1859729 Yes Yes	GPM TOTAL GPM TOTAL GPM Yes Yes 3 3.5 638,716 4 1,72,3628 3 Yes Yes 3 3.5 6440591 4 1,769,295 3 Yes Yes 3 Yes 4 3.5 6,489,476 4 1826,691 3 Yes Yes 3 Yes 7 Yes 7 Yes 7 Yes 7 Yes 3 Yes 4 Yes 4 Yes 5 Yes 3 Yes 3 Yes 3 Yes 3 Yes 4 Yes 4 Yes 5 Yes 3	GPM TOTAL GPM TOTAL GPM TOTAL Yes Yes Yes 3 Yes 3.5 6,38,716 4 1,72,3628 3 2,388,604 Yes Yes Yes Yes Yes 3.5 6440591 4 1,769,295 3 2,414,206 Yes Yes Yes Yes Yes 3.5 6,489,416 4 1826,691 3 2,437805 Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	GPM TOTAL GPM TOTAL GPM TOTAL GPM Yes Yes 7 Yes

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

WEE	KLY	LSP-3			MR-4		LSR-8	то	TO CITY SEWER	
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	
Pump Switch is	on Auto	3	Yes	4	Yes	ス	Yes	1.7		
516/16	LP		6591712		1950801		2485703		1,821,771	
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes	14		
5/13/16	LP		6639815		2013818		2510402		1957595	
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes	17		
5/20/16	28		6685396		2054865		2527101		2051653	
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes	16.		
512716	18		6720745		2/20135				2154,649	
Pump Switch is			Yes		Yes		Yes			
									\$ 1 to	

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

		7 77 22			·				Ť
WEEKLY	,		LSP-3		MR-4		LSR-8	то	CITY SEWER
Date/Time Ir	nitials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is on Aut	to		Yes		Yes		Yes	<u> </u>	
850 /	P	3	6730804	3	2,138,285	2	2529460	18	2196022
Pump Switch is on Aut	to		Yes		Yes		Yes		-
8/17/16 h	\mathscr{S}		676440	7	2/97200		2535709		2292,792
Pump Switch is on Aut	to		Yes		Yes		Yes		
8 12 4/16 9	P		6798211		2257/61	p st	25 42,006		2386,142
Pump Switch is on Aut	to		Yes		Yes		Yes		
7/1/16 8:00			6,833112	.	2277379	4	2548267		2452,741
Pump Switch is on Aut			Yes		Yes		Yes	:	/ /
	-								· ·
SYST		BH	1161 -	6/7/1	6		h	1	

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

WEE	KLY		LSP-3		MR-4		LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is on Auto			Yes		Yes		Yes		
711)16 All Week	LP		OFF		OFF		DFF		OFOF
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes		
7/8/16	28		6869764		2343932		2554 704		2,559766
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes		
7(15/16	28		6905931		2390066		2566905	-	2652476
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes		
7/22/16	LP	· ·	6939618		2453743		2566902		2749049
Pump Switch is	on Auto	3	Yes	4	Yes	2	Yes		
7/29/16	28		6971635		25 14 608		2572709		2842508

I certify that the above information is true and accurate to the best of my knowledge.

Lorenzo Plat



WATER FLOW (WEEKLY)

Weekly		LSP-3		MR-4		LSR-8R	To	City Sewer
Date/Time Initia	s GPM	Total	GPM	Total	GPM	Total	GPM	Total
Pump Switch is on Auto	0	Yes	0,	Yes	0	Yes		
		systam	Dov	VOK FOR T	*KK	CLEANING		
Pump Switch is on Auto	0	Yes	0	Yes	0	Yes		
3 12 16 9.00 Xf	'	7021226		2621389		2582801		030 13872
Pump Switch is on Auto	0	Yes .	0	Yes	0	Yes		
8 19 16 10		7040267		2.683577		2589201		3,096,712
Pump Switch is on Auto	0	Yes	0	Yes	0	Yes		
8 (25/16		7048176		2709716		259(800		3131017
Pump Switch is on Auto	0	Yes	0	Yes	0	Yes		

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

WEEKLY		LSP-3		MR-4		LSR-8		CITY SEWER
Date/Time Initials	GРM	TOTAL	GPM	TOTAL	GPM	TOTAL	GРM	TOTAL
Pump Switch is on Auto	3.9	Yes	4.5	Yes	2.5	Yes		
12/16/20		7059016		2738819		2594807	18	317017
oump Switch is on Auto	3.9	Yes	4.5	Yes	25	Yes		
13:10 7		7082129		2,799,999		2601107	18	3,256,706
on Auto		Yes		Yes		Yes		3306123
116/16 2.45 2P		7095458		2834441		2604300	-4-3 -4-3 -4-3	3306612
ump Switch is on Auto		Yes		Yes		Yes		
723 1664)		71				2608202		337450
ump Switch is on Auto		Yes		Yes		Yes		
30 16 2 P		7133112		2928 2294		2611808		3439750

I certify that the above information is	s true and accurate t	o the best of my knowledge
1		

WATER FLOW (WEEKLY READING)

	•		ļ		T T		1		Г			
Į	WEE	KLY		LSP-3		MR-4		LSR-8		TO CITY	SEWE	R
	Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GРM	GW TOTAL	GРM	TOTAL
1	SY STEN	r off		Yes		Yes		Yes				
	10/7/16											
2	SYSTEM	OFF		Yes		Yes		Yes				
	10/14/16											
3				Yes		Yes		Yes				
	10/2//16		3.5	7159/65	4,5	2984976	2	2615100	18	3529472		
4				Yes		Yes		Yes				
	10/28/16		3.5	7192179	4.5	30 43 297	2	2617108	18	3625625		
5				Yes		Yes		Yes				

I certify that the above information is true and accurate to the best of my knowledge.

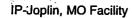
Torenzo Pittolog

WATER FLOW (WEEKLY)

WEE	KLY		LSP-3		MR-4	er e	LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is c	on Auto		Yes		Yes	1	Yes		
10.30(4)	LP	3	722167	4.5	3102171	1.5	2617307	18	3721125
Pump Switch is o	on Auto		Yes		Yes	ď	Yes		
12:20(00)	20	3	725 6685	4,5	3160071	115	2630705	18	3821612
Pump Switch is o	n Auto		Yes		Yes		Yes		·
11/18/16 14:00(m)	LP	3	7273245	4,5	3,19,1059	1.5	2636404	18	3878588
Pump Switch is o	n Auto		Yes		Yes		Yes		
11/25/16	28		SYSTE	M	OFF				3971419
Pump Switch is o	n Auto		Yes		Yes		Yes		
			s y s Tel	Λ	05				

I certify that the above information is true and accurate to the best of my knowledge.

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WATER FLOW (WEEKLY)

WEE	KLY	LSP-3			MR-4	· ·	LSR-8	то	CITY SEWER
Date/Time	Initials	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL	GPM	TOTAL
Pump Switch is	on Auto		Yes		Yes		Yes		
13,40	LP		3308,16(3297774	· <u>-</u>	2657,708		4058550
Pump Switch is	on Auto		Yes		Yes		Yes		
12/9/16	18		7345310	****	3322220		2661,005		4096194
Pump Switch is	on Auto		Yes		Yes		Yés		
12/16/16	LP		7376123		3379857	14 -	2668400		4185462
Pump Switch is o	on Auto		Yes		Yes		Yes		
12/23/16	2P	~			OFF	*****			
Pump Switch is o	on Auto	·	Yes		Yes DFF		Yes		
12/30/16	28							Annual State of State St	and the said

I certify that the above information is true and accurate to the best of my knowledge.

herenzo Pittsley

Appendix E Well Inspection Logs

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR / 4

Date(s): $\frac{9-12}{9-13-16}$ Inspector's Name: 0 Dafoe (Legen 20

Page _1__ of __7__

INSPECTION ITEM			1	WELL NUMBERS			
	J-01.27R	<u>J-06.58</u>	<u>J-08.28</u>	J-08.54	<u>J-08.120</u>	<u>J-11.119</u>	<u>J-12.28</u>
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	Latched yes No	Latehed Yes No	latched yes No	Latched yes NO	Latchell Yes No	Latched Yes No	Latched xes No
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	600d NO NO	ro No No	(400) 100 100 1/A	6600 100 NO N/A	6008 NO NO N/A	NO NO	000 NO NO
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	Food Y-5 Good Open	6000 Yes 6000 Open	bood bood Open	bood opn	bood yes bood open	bood yes bood open	1000 708 0000 0000
4. PVC Inner Casing Casing condition Cap in place	tood tes	6000 Yes	600d Ves	400d 405	<u> 6000</u> 405	be od yes	<u> </u>
5. Other Observations	<u> </u>	N/A	N/A	<u>~/A</u>	<u>\b/a</u>	-N/A	N/A
6. Well Repairs Made	MA	N/A	- <u>4</u> /	N/A	<u>ν/Δ</u>	MA	MA
7. Well Repairs Needed	None	Nove	Dove	Nove	PONC	4000	Dy CN

/corenzo

Page 2___ of __7__

INSPECTION ITEM				WELL NUMBERS			
	<u>J-13.37</u>	<u>J-13.65</u>	<u>J-13.84</u>	<u>J-13.98</u>	<u>J-14.30</u>	<u>J-14.84</u>	<u>J-14.115</u>
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	Ladehed Yes	Marched yes NO	Latched 765 100	Latched tes	iatched Jes Nu	Larched 145	Latch all
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	6000 NO NO	Vood NO NO	4000 NO NO	bod No No	(5000) NO NO	17600 - 100 NO	(FOO) US NS NO
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	Good 125 Lood open	boad 185 bood Open	1 200d 1 25 1 400 0 per	Good 100 Open	6000 755 15000 6pen	Lood Yes Lood open	yes Gad Open
4. PVC Inner Casing Casing condition Cap in place	400D 425	<u>6008</u>	600d	bood Jes	Fand Yes	- 600d - 455	<u> </u>
5. Other Observations	<u> 4/A</u>	<u>~/A</u>	N/A	<u>P/A</u>	-NE	MA	<u>~//</u>
6. Well Repairs Made	-V/A	N/A	MA	- P/A	nlu	<u> </u>	w/f
7. Well Repairs Needed	Hope	None	Nov ?	Nove	None		- PAR

1.00.41

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR ________

Date(s): 9-12 9-13-16 Inspector's Name: D Datae | Loreuzo

Page <u>3</u> of <u>7</u>

INSPECTION ITEM				WELL NUMBERS			
	<u>J-14.160</u>	<u>J-16.46</u>	<u>J-16.76</u>	<u>J-21.59</u>	<u>J-23.18</u>	J-23.43R	<u>J-23.71</u>
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	louched Yes	Lestchal yes No	Latched Yes No	Latched yes No	Latched + ES	Lestched Ves NO	Latched Ves NO
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	00 00	6000 NO NO	<u> </u>	0-00 D NO NO NO	LO HO	tool bo so bo	tood En En
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	bood 15 God Copen	Good Yes Good Open	bood bood open	Good Yes Good Open	Cool Yes Good Open	12 god 14 god 14 god 19 gov	bood 1700 Open
4. PVC Inner Casing Casing condition Cap in place	<u>6.000</u>	<u>600d</u>	(7/08) 105	<u>6000</u>	6 ond	<u>6000</u>	6 and
5. Other Observations	- MA	MA	-yA	N/A	-* <u>//a</u>		<u> </u>
6. Well Repairs Made	NA	AW		- N/A	- <u>174</u>	- N/W	<u> </u>
7. Well Repairs Needed	NON	Nove	Nore	None	Nove	Nove	NONT

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR _______

	Losenza					Pag	e <u>4</u> of <u>7</u>
INSPECTION ITEM	****		V	VELL NUMBERS			
	<u>J-23.107</u>	<u>J-24.35</u>	<u>J-25.40</u>	<u>J-26.28</u>	J-31.60R	<u>J-35.39</u>	<u>J-39.18</u>
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	Latched 195 NO	Costchell +CS NO	tes vo	125 ho	Lasched Jrs Jrs	Leifehrd 400	Litched 1/es 1/0
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	6008 	6600 NO NO	1,000 40 00	600d 20 20	VO VO	bood wo No	6-ord No
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	6000 6000 0pen	brod jei Good open	bood bood ope	5008 155 0008 Pp. 3	bood Cond open	bod bod open	bood yes bood open
4. PVC Inner Casing Casing condition Cap in place	1500h	yes.	bood Ves	1000 465	600D	<u>6001</u>	bood Ye
5. Other Observations	<u>\rm \/A</u>	-MA	W/A	-NA	- NA		N/A
6. Well Repairs Made	<u> Wa</u>	<u> Ma</u>	P/A	MA	J/A	NA	NIB
7. Well Repairs Needed	<u> Nave</u>	<u> Upve</u>	Pove	work	VOVE	NUL	None

Jan-10

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR ______

Date(s): 9-/2/9-/3-/6 Inspector's Name: D Dafee/	LOOPNZO					Pag	e <u>5</u> of <u>7</u>
INSPECTION ITEM				WELL NUMBERS			
A 114 (1 m)	<u>J-46.110</u>	<u>J-47.237</u>	<u>J-49.17</u>	<u>J-52.17A</u> Manholt	<u>J-55.22</u> mankale	LSP-1	LSP-2
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	Latched Yes	catched 7°5 vo	Latched XTS MD	~/A		A	v/A
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	600d 00 00	6-06d 00 00	rod No No No	NO NO	1000 100 100 100	6000 NO NO	600) 60 64 00
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	Cash yes bood open	Good Good open	6000 400 6000 0000	ν/A - χες - μ/α - μ/α	M/N Yes YA N/D	~/A 	NA NA NA
4. PVC Inner Casing Casing condition Cap in place	Grood Yes	<u> 1-200</u>	bood Yes	606D	600) 75	<u>6000</u>	400D
5. Other Observations	w/A	MA	MA	<u> </u>	P/A	- W/A	<u>~/A</u>
6. Well Repairs Made	<u>~/A</u>	- YA	<u>MA</u>	MA_	<u> p/A</u>	<u> </u>	~\Tr
7. Well Repairs Needed	NONY	Nove	rout	Non a		Nove	Now P

Jan-10

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR 12

Date(s): 9-12/9-13-16
Inspector's Name: 1) Dafoe (Lorenzo Page _6__ of __7__ **WELL NUMBERS** INSPECTION ITEM LSR-7 LSR-8R MP-1 MP-2 MP-4 LSP-3 LSR-6 newhole Marhole Munhole manhole manhole marhole manhole 1. Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering 2. Surface Condition 6000 6000 6000 Good God 6000 Concrete pad condition -000 NO 20 Ponded water near well 10 40 NO MO NO Ground subsidence NO NO MO NO WO NO NO 20 NU 40 Photograph taken NO NU 3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged) 4. PVC Inner Casing Casing condition Cap in place 5. Other Observations 6. Well Repairs Made 7. Well Repairs Needed NONE MONY NOUC NOW6

INTERNATIONAL PAPER, JOPLIN, MO FACILITY GROUNDWATER MONITORING WELL ANNUAL INSPECTION LOG YEAR _______

INSPECTION ITEM			WELL NUMBERS	
Well Security Lock (latched/not latched) Lock lubricated Evidence of tampering	MR-1 manhok N/A N//+	MR-3 Nanhole N/A N/A	MR-4 manhole t/A N/A NO	
2. Surface Condition Concrete pad condition Ponded water near well Ground subsidence Photograph taken	1000 NO NO	600D WD NO	bood NO NO	
3. Steel Outer Casing Casing condition Well number legible Lid/hinge/latch condition Drain hole (open/plugged)	6000 7 < 5 N/A M/A	Lood Jes NIN NIN	HOOD HELD	
4. PVC Inner Casing Casing condition Cap in place	tool tes	Local yes		
5. Other Observations		<u>M</u>	ν/)	
6. Well Repairs Made	- MA	<u> </u>	MA	
7. Well Repairs Needed	UBNE	none	MONR	

Appendix F
Water Level/Total Depth Data Forms & Groundwater Sampling Records

WATER LEVELS International Paper - Joplin Facility

DATE:

WELL NO.	DATE	DEPTH TO WATER	TOTAL DEPTH	WELL NO.	DATE	DEPTH TO WATER	TOTAL DEPTH
J-01.27R	9-12	9,38	32,08	J-25.40	9-12	3.87	41,06
J-06.58	9-13	15.62	58,74	J-26.28	9-12	6,44	3430
J-08.28	9-13	18.07	31,11	J-31.60R	9-2	6.53	68.86
J-08.54	9-13	19.15	59,05	J-35.39	9-13	12.29	42.89
J-08.120	9-13	18,71	124,85	J-39.18	9-12	8.45	28,30
J-11.119	9-12	13,02	121,94	J-48.110	9-13	16.56	113,12
J-12.28	9-12	9,50	27.48	J-47.237	9-12	9,97	239, 31
J-13,37	9-12	12.41	36,78	J-49.17	9-13	6.03	14,83
J-13.65	9-12	12.56	68,66	J-52.17R	9.13	15,67	22,27
J-13.84	9-12	12.64	83,90	J-55.22	9-13	12.92	24.87
J-13.98	9-12	13,72	101,60	LSR-6	9-12	10,27	97,18
J-14.90	9-12	10,90	32,32	LSR-7	9-13	14.38	48.78
J-14.84	9-12	12,94	85,90	LSR-8R	9-13	14,95	
J-14.115	9-12	11,92	110,74	MFI-1	9-12	5.12	50,33
J-14.160	9-12	14,53	160,61	MFI-3	9-12	9,97	59, 28
J-16.46	9-12	10,11	49,10	MR-4	9-13	1892	
J-16.78	9-12	10.96	78,59	LSP-1	9-13	15,32	76,53
J-21.59	9-12	8,25	61.79	LSP-2	9-13	15.93	109,45
J-23.18	9-13	7.19	19.58	LSP-3	9-13	15.41	
J-23.43R	9-13	10,71	45.61	MP-1	9-12	9,68	97,65
J-23.71	9-13	16,91	72.54	MP-2	9-12	6.02	80.50
J-23.107	9-13	16.93	109,49	MP-4	9-13	12.25	
J-24.35	9-13	14.39	35,40	MR-2	9-12	8,02	54,84

LNAPL - 4.61

Prepared 8/13/2015

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International Paper **Groundwater Sampling Record** PACJECT # OCATION DATE - 141-16 WELL No. J-11-119 02.20000003 Joplin, MO PROJECT NAME FIELD PERSONNEL/COMPANY SAMPLE No. J.//-/19 Earthcon Dove FIELD CONDITIONS/WEATHER SAMPLE TIME: 930 International Paper SUNNY 750 Well Condition Inspection (circle one) Equipment Cleaning Procedures tocked) not locked potable water and phosphate-free soap number: legible not legible potable water rinse outer casing: (IIOOd) fair distilled poor water rinse: deionized inner casing: good) fair poor solvent rinse: (acetone) hexane well photographed: (m) yes air dry Casing Diameter: (circle one) Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Other: Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.4713,00 Depth to Water (feet): Measuring Point Elevation (feet): 121.941 Depth of Well (feet): **Groundwater Surface Elevation:** 108,92 Water Column (feet): NO LNAPL present: thickness: Casing Volume (gallons): 17,75 **DNAPL** present: NO. thickness: Calculated Purge Volume (gallons): Lowflow Remarks: Actual Purge Volume (gallons): 41.5 9915 Well Evacuation moderate 1 fast Water level recovery is: very slow slow Bailed dry: yes CUMULATIVE TIME CONDUCTIVITY TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) 2400 hrs VOLUME (gal) (us/cm) (NTU) REMARKS 845 O PURGE START - 5 5915 8,94 950 21.22 0,209 Clear. Ø 18.81 1.09915 855 8.27 0,209 NO ador 900 2,0 9915 19.19 785 0,217 2,5 cals 905 19.28 7,85 0,210 0,8 3,09915 19,32 910 7,83 0,212 0,5 915 3,5 9915 19,36 7.84 0.212 0,3 720 4.0cals 19.41 7.84 6,213 0 925 4.56413 19,42 0,213 ついそろ 0 Measurement and Sampling Equipment Type Manufacturer Model # Calibration Date Peri Pump Geo Tech Geo Pump N/19 meter Horiba C- 25 9-14-16 meter Solivet 100' NIA SAMPLE ANALYTICAL **BOTTLE TYPE/ QA REMARKS** NUMBER METHOD **PRESERVATIVES** 5-11-119 82700 11 Amber + ms/msD

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Environmental Challenges
BUSINESS SOLUTIONS

International Paper Groundwater Sampling Record PROJECT # LOCATION DATE 0- 14-16 WELL No. J-12-28 02.20000003 Joplin, MO PROJECT NAME FIELD PERSONNEL/COMPANY SAMPLE No. J-12-2分 Dave Datese Gerthan SAMPLE TIME: 1030 International Paper SUNNY Well Condition Inspection (circle one) **Equipment Cleaning Procedures Tocked** not locked potable water and phosphate-free soap number: (legible) not Legible potable water rinse outer casing: good fair water rinse: distilled deionized poor acetone inner casing: (good fair poor solvent rinse: hexane well photographed: /no yes air dry Casing Diameter: (circle-qne) (2:/ Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47 Other: 9.50' Depth to Water (feet): Measuring Point Elevation (feet): 27,481 Depth of Well (feet): Groundwater Surface Elevation: 17.98' Water Column (feet): NO LNAPL present: thickness: 293 Casing Volume (gallons): **DNAPL** present: thickness: NO (ou How Calculated Purge Volume (gations): Remarks: Actual Purge Volume (gallons): 4.59015 Well Evacuation Water level recovery is: moderate fast very slow slow Bailed dry: yes no TIME **CUMULATIVE** CONDUCTIVITY TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) рΗ 2400 hrs VOLUME (gal) (us/cm) (NTU) REMARKS 950 0 **PURGE START** . 5 gals 6.5U clear 2 8. R3 0.391 1000 <u>6915</u> 21.17 6.55 0,384 16.3 No odor 0.384 0,9/5 6.56 1005 20,87 19.6 20,76 64 0.379 1010 3.0 a 415 20.4 50/5 20,64 18.2 1015 0,376 1020 3,5 9915 20.60 6.66 0.376 17.9 4.06915 1025 20.57 12.67 0.377 17,7 4.55415 1030 20.54 6.67 0,376 17.6 Measurement and Sampling Equipment Manufacturer Type Model # Calibration Date tcoTech Geo Pumo Peri Pump Moriba 9-74-Meter Meter Soliust 100' NIA SAMPLE ANALYTICAL **BOTTLE TYPE/ QA REMARKS** NUMBER METHOD **PRESERVATIVES** 7-13-28 82706 11 Amber

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Environmental Challenges BUSINESS SOLUTIONS International Paper **Groundwater Sampling Record** PROJECT# LOCATION WELL No. T-14-30 DAE -14-16 02.20000003 Joplin, MO FIELD PERSONNEL COMPANY Dave Dertoc PROJECT NAME SAMPLE No. ゴー/4-30 Earthcou FIELD CONDITIONS/WEATHER SAMPLE TIME: International Paper SUNNY 810 Well Condition Inspection (circle one) **Equipment Cleaning Procedures** Clocked not locked potable water and phosphate-free scap leaible. number: not legible potable water rinse outer casing: good) fair poor water rinse: distilled deionized inner casing: good fair poor solvent rinse: acetone hexane well photographed: /ño ves air dry Casing Diameter: (circle one) 2" Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Casing Volume (gallons/ft) for: $2^* = 0.163$; $4^* = 0.653$; $6^* = 1.47$ Other: Depth to Water (feet): 10,901 Measuring Point Elevation (feet): 32.32' Depth of Well (feet): Groundwater Surface Elevation: 21.421 Water Column (feet): LNAPL present: NO thickness: 3.5 Casing Volume (gallons): **DNAPL** present: NO thickness: Calculated Purge Volume (gallons): Low flow Remarks: Actual Purge Volume (gallons): 4 gals Well Evacuation Water level recovery is: very slow (moderate) fast Bailed dry: yes no TIME CUMULATIVE CONDUCTIVITY TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) ρH 2400 hrs VOLUME (gal) (us/cm) (NTU) REMARKS 1055 0 PURGE START 1100 Jack 24.39 7.69 0,081 209 Slightly 1105 1,0 gals 18,53 7.17 0.081 145 turbid 1110 1.5 G51s 19,34 20 6.074 104 1115 2.09915 **BE.P**\ 6,88 0,075 82.5 2.5 a sis 1120 19.42 6,86 0,076 69.8 1125 310 ccls 19,43 6.85 6,077 70,4 1130 3,3 rals 19.45 6.84 0,077 70,0 1135 4.03015 19,46 ていろコ 69,7 80,00 Measurement and Sampling Equipment Type Manufacturer Model # Calibration Date UMD Geo Tech GEO PUMD w/4 Meter Solinst 1000 NA meter Horiba U-52 9-14-16 SAMPLE ANALYTICAL **BOTTLE TYPE/** NUMBER *QA REMARKS* **METHOD PRESERVATIVES** J-14-30 8270c Ambor

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International Paper **Groundwater Sampling Record** PANIECT # LOCATION <u>Joplin, MO</u> WELL No. J-21-59 02.20000003 FIELD PERSONNELICOMPANY Dave Datos PROJECT NAME Earthon SAMPLE No. J-21-59 FIELD CONDITIONS/WEATHER SAMPLE TIME: 1230 International Paper Overcest 800 Well Condition Inspection (circle one) Equipment Cleaning Procedures not locked potable water and phosphate-free soap cover: number: (legible not legible potable water rinse good fair outer casing: distilled deionized poor water rinse: good) fair inner casino: poor solvent rinse: acetone hexane well photographed: yes no air drv Casing Diameter: (circle one) Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Casing Volume (gallons/ft) for: $2^* = 0.163$; $4^* = 0.653$; $6^* = 1.47$ Other: 8.25 Depth to Water (feet): Measuring Point Elevation (feet): 61,791 Depth of Well (feet): Groundwater Surface Elevation: 53,541 Water Column (feet): DO LNAPL present: thickness: 8,72 DNAPL present; NO thickness: Casing Volume (gallons): Lowflow Calculated Purge Volume (gallons): Remarks: cals Actual Purge Volume (gallons): Well Evacuation fast Bailed dry: Water level recovery is: very slow slow moderate (yes no CONDUCTIVITY TURBIDITY ODOR/COLOR/ CUMULATIVE TIME TEMPERATURE (°C) pΗ 2400 hrs VOLUME (gal) (us/cm) (NTU) REMARKS 1155 **PURGE START** O フ.スタ 22,59 0.29 0.8 Clear -1200 5 99/5 9.69 7.05 0,306 apor 1205 1,09915 19,24 3.7 1210 1.5045 7.05 0.319 19,28 7,01 0,321 2,00915 3.4 1215 <u>3</u>,8 19.30 7.00 0,322 1220 a.59915 1225 3.00015 19,33 7.00 0,324 4,0 1230 3.59 als 19.34 99 0326 Measurement and Sampling Equipment Model # Calibration Date Type Manufacturer 9-14-16 meter Hociba 0-52 Meter Solivist 100' ムノね Pum P fro Irch 600 Puno SAMPLE ANALYTICAL BOTTLE TYPE/ OA REMARKS METHOD PRESERVATIVES NUMBER 1.21.59 \$270 C Amber

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International Paper Groundwater Sampling Record PHOJECT # WELL No. J-25- 40 02.20000003 Joplin, MO PROJECT NAME SAMPLE No. J-25-40 Dave Dator SAMPLE TIME: 115 International Paper Overcast 920 Well Condition inspection (circle one) Equipment Cleaning Procedures locked) cover: not locked potable water and phosphate-free soap number: (legible) not legible potable water rinse outer casing: good fair poor water rinse: distilled deionized inner casing: fair poor solvent rinse: acetone hexane well photographed: ves (no air dry Casing Diameter: (circle one) 0 Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Other: Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47Depth to Water (feet): **ጓ .**8ጋ፣ Measuring Point Elevation (feet): Depth of Well (feet): 411.06' Groundwater Surface Elevation: 37.19' Water Column (feet): LNAPL present: NO thickness: 6.06 Casing Volume (gallons): DNAPL present: NO thickness: Calculated Purge Volume (gallons): Lowflow Remarks: Actual Purge Volume (gallons): Well Evacuation Water level recovery is: very slow slow (moderate) fast Bailed dry: yes TIME CUMULATIVE CONDUCTIVITY TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) ρН 2400 hrs VOLUME (gal) (µs/cm) (NTU) REMARKS 1246 **PURGE START** 1250 5991 23.59 7,41 0.519 8.0 Clear -1255 1.0 9915 22.32 7.43 0.529 0 NO odor 100 22.29 1.50,015 7.40 0.522 0 105 2.0 9915 2225 7.40 0,518 0 110 2.5 gals 22.21 7,40 0,516 0 115 3.0 gals 22,/9 7,40 0,515 Measurement and Sampling Equipment Type Manufacturer Model # Calibration Date meter Solinst 100' Meter Horiba ひっかつ Pump Gro Tech Goo pump SAMPLE ANALYTICAL **BOTTLE TYPE/** NUMBER METHOD **QA REMARKS PRESERVATIVES** 5-25-40 8270c Haber

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Groundwater Sampling Record International Paper PROJECT # LOCATION Joplin, MO WELL No. J-31 02.20000003 FIELD PERSONNEL/COMPANY Dave Dafoe PROJECT NAME Earthcoe SAMPLE No. J-31-LOR 85 SUNNY SAMPLETIME: 2/0 International Paper Equipment Cleaning Procedures Well Condition Inspection (circle one) (locked potable water and phosphate-free soap not locked cover: potable water rinse number: (legible not legible distilled deionized water rinse: outer casing: fair poor (good асеюпе hexane inner casing: fair poor solvent rinse: not well photographed: ves air dry Casing Diameter: (circle one) Ø) Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Casing Volume (gallons/ft) for: $2^* = 0.163$; $4^* = 0.653$; $6^* = 1.47$ Other: 6,531 Measuring Point Elevation (feet): Depth to Water (feet): 68,341 Groundwater Surface Elevation: Depth of Well (feet): 62,33 NO Water Column (feet): LNAPL present: thickness: 10,16 DNAPL present: thickness: Casing Volume (gallons): LowGow Remarks: Calculated Purge Volume (gallons): Actual Purge Volume (gallons): Well Evacuation Bailed dry: no Water level recovery is: very slow slow ' moderate fast yes CONDUCTIVITY TURBIDITY ODOR/COLOR/ **CUMULATIVE** TIME TEMPERATURE (°C) ρH REMARKS VOLUME (gal) (us/cm) (NTU) 2400 hrs 140 **PURGE START** 0 0.227 0,8 8,34 clear -23,34 45 15 9015 1251 19.16 7.83 0 NO ODOF 150 1.09415 7,86 0,246 0 20,55 155 1.54915 21,12 7.85 0.247 0 200 2.0 4915 7,85 a1.18 00,248 0 206 7,84 21.20 0,249 210 Measurement and Sampling Equipment Calibration Date Model # Type Manufacturer Geo Pump gmug geo Tech U-52 Meter Horiba 501105+ 100' meter ANALYTICAL **BOTTLE TYPE/** SAMPLE OA REMARKS NUMBER **PRESERVATIVES METHOD** Amber J-31-60R 82706

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International Paper **Groundwater Sampling Record** PROJECT # LOCATION WELL No. J-49-17 DATE - 14-16 02.20000003 Joplin, MO PROJECT NAME FIELD PERSONNEL/COMPANY SAMPLE No. J-49-17 Earthcon Dave Dafore FIELD CONDITIONS/WEATHER SAMPLE TIME: 300 International Paper SUNNY -850 Well Condition Inspection (circle one) Equipment Cleaning Procedures cover: Clocked not locked potable water and phosphate-free soap number: /legible_ not legible potable water rinse outer casing: good) fair роог water rinse: distilled deionized inner casing: Sood fair poor solvent rinse: acetone hexane well photographed: (no) Ves air dry Casing Diameter: (circle one) Casing Volume Calculation: (πr²h)(7.48 gal/ft³) (2^{\bullet}) Casing Volume (gallons/ft) for: $2^* = 0.163$; $4^* = 0.653$; $6^* = 1.47$ Other: Depth to Water (feet): 6.031 Measuring Point Elevation (feet): Depth of Well (feet): 16,83' Groundwater Surface Elevation: Water Column (feet): 10.8 LNAPL present: thickness: 1.76 Casing Volume (gallons): **DNAPL** present: NO thickness: Lowflow Calculated Purge Volume (gallons): Remarks: Actual Purge Volume (gallons): Well Evacuation Water level recovery is: very slow slow moderate fast Bailed dry: yes no TIME **CUMULATIVE** CONDUCTIVITY TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) 2400 hrs ьH VOLUME (gal) (us/cm) (NTU) REMARKS 20 a PURGE START 235 24,15 Sagl 6.63 0.794 49,1 5 light turbin 23,20 240 110 agls 6.30 0,801 39.2 موصله و صف 24,53 245 6.30 115,415 0.799 66.5 250 24,71 2.0 cg 15 6.32 0.797 40.L 255 2.56 24.74 6.33 0,795 61,3 300 3,0 9915 24.73 6,73 O.793 Measurement and Sampling Equipment Type Manufacturer Model # Calibration Date meter toribe U-52 9-14-16 Pump ten tech Pun 600 MA Meter Soliust 100' SAMPLE **ANALYTICAL** BOTTLE TYPE/ NUMBER **QA REMARKS** METHOD **PRESERVATIVES** 5-49-17 82706 Amber



Environmental Challenges BUSINESS SOLUTIONS

International Paper Groundwater Sampling Record PROJECT # OCATION DATEG: _ /4. / WELL No. IT-52-17R 02.20000003 Joplin, MO FIELD PERSONNEL/COMPANY PROJECT NAME SAMPLE No. 5-52-17R Datoe SITE SAMPLE TIME: 850 International Paper Well Condition Inspection (circle one) **Equipment Cleaning Procedures** cover: docked not locked potable water and phosphate-free soap number: (legible not legible potable water rinse outer casing: fair poor water rinse: delonized inner casing: good fair poor solvent rinse: acetone hexane yes well photographed: (no) air dry Casing Diameter: (circle one) Ž, Casing Volume Calculation: (\pi r^2h)(7.48 gal/ft^3) Casing Volume (gailons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47 Other: 15,67 Depth to Water (feet): Measuring Point Elevation (feet): 22,27' Depth of Well (feet): **Groundwater Surface Elevation:** Water Column (feet): 60 LNAPL present: 20 thickness: ,08 **DNAPL** present: Casing Volume (gallons): 20 thickness: Low flow Calculated Purge Volume (gallons): Remarks: Actual Purge Volume (gallons): Well Evacuation Water level recovery is: very slow Slow moderate fast Bailed dry: yes TIME **CUMULATIVE** CONDUCTIVITY ODOR/COLOR/ TURBIDITY TEMPERATURE (°C) рΗ VOLUME (gal) 2400 hrs (us/cm) (NTU) REMARKS 315 **PURGE START** 27.94 0,941 320 c9/5 6.73 ያ,ረ 33,89 bads 325 5,83 0,962 815 9 9915 23,75 10.04 330 0,972 23,80 6.08 3*35* ک, (0.970 Measurement and Sampling Equipment Тура Manufacturer Calibration Date Model # 100 Solinst metec Mater lbriba 0-52 PUMB Geo Tech GEO RMA BOTTLE TYPE/ SAMPLE ANALYTICAL **QA REMARKS** NUMBER **METHOD PRESERVATIVES** J-52-17R 82706 Amber

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Internation	onal Pap	jer		B	JSINESS S	OLUTIC)NS *		Groui	ndwater S	ampling Record
WELL No.	J-55-	' 3.5	PROJECT #	02.200	00003	LOCAT					DATE - 15-16
SAMPLE N	10. J-83	-32	PROJECT NAM	Ë		FIELD	PERSONNEL	Joplin, I	200	Dofoc	Gertheon
SAMPLE T	IME: 80	20	SITE	Internation	al Paper	FIELD (CONDITIONS	WEATHER	501		2*
Well Cond	lition Insp	ection (circie one)		Equipmen	t Clean	ing Proc	edures			
cover:	docked	not loc	ked		- potable w		_		pap		
number:	letilible)	not leg	ible		- potable w						
outer casin	ıg:	1	fair	poor	- water rins	ie:	distilled	>	deioni	zed	
inner casin	g:	Good	fair	poor	- solvent ri	nse:	acetone		hexan	8	
well photog	graphed:	yes ((no)		- air dry						
					ation: (<i>ra</i> ² h)(s/ft) for: 2" =			53; 6" = 1	.47		
Depth to Wa	iter (feet):		12.92	• •		Measu	ring Point	Elevation (feet):	AL HELD	
Depth of We	il (feet):		24,8	'フ'				face Eleva	-	**************************************	<u> </u>
Water Colum	nn (feet):		11,9	5'			. present:	N.		thickness:	
Casing Volum	me (callons	<u></u> }:		95			L present:		0	thickness:	<u> </u>
Calculated P	**	-	-6:		flow	Rema			ري.	UIRRII986.	
Actual Purge			**************************************			rwiiia	iks:	***************************************	***************************************		
		anons);		1,00	39/5						
Well Evacu								_			
Water level	recovery :	\$:	very slow	(slow)	moderate	fast		Bailed d	гу:	yes	no
TIME 2400 hrs	VOLUME		TEMPERA	TURE (°C)	рH		1	CTIVITY /cm)	T	URBIDITY (NTU)	ODOR/COLOR/ REMARKS
730	0										PURGE START
735	-3	261	٤١,٧	11	7.9	18	0,	167	10	2,5	ckor-
740	.6	<u>491</u>	20,		6.8	0	0.	254		1,1	sligh+
745	-9	45/	20		6.7			379		Ö	Odor
750		acils	19.		6.			383		0	1 0005
755		gals	19,		6.7			186			
800		agis	19:		6,7			389		<u> </u>	
	.,, .	340	* * * * * * * * * * * * * * * * * * * *		9,7	/	0,	100		0	
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Measureme		npling E	• •								
Fum ()U		Manula 6-co 7:			<i>k</i>	# Model מאיניי	_		Calib	ation Date
met								ρ			/
Met				riba inst	maladii		1-5-2				5-16
					***************************************		1001				1 <i>A</i>
SAMP NUMB	ER		ANALYTICA METHOD	L		RVATIV				QA REMARK	S
J-55	<u>- ス</u>		82706		12 /	mbo	-				

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Environmental Challenges BUSINESS SOLUTIONS **Groundwater Sampling Record** International Paper DATE -15-16 PROJECT # LOCATION FIELD PERSONNEL COMPANY Days Daglac WELL No. J-1646 02.20000003 PROJECT NAME SAMPLE No. J-16-46 Easthcon FIELD CONDITIONS/WEATHER SAMPLETIME: 855 50004 740 International Paper Equipment Cleaning Procedures Well Condition Inspection (circle one) potable water and phosphate-free soap cover: **Jocked** not locked not legible number: Gegiblepotable water rinse good) distilled deionized water rinse: outer casing: fair poor (acetone) hexane BOOT fair poor solvent rinse: inner casing: (no) well photographed: air dry ves Casing Diameter: (circle one) Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Casing Volume (gallons/ft) for: $2^* = 0.163$; $4^* = 0.653$; $6^* = 1.47$ Other: 10.11 Measuring Point Elevation (feet): Depth to Water (feet): 49,10' Groundwater Surface Elevation: Depth of Well (feet): 38,99 LNAPL present: thickness: Water Column (feet): 36 **ONAPL** present: thickness: Casing Volume (gallons): Lowflow Remarks: Calculated Purge Volume (gallons): Actual Purge Volume (gallons): Well Evacuation moderate fast Bailed dry: yes no Water level recovery is: very slow CONDUCTIVITY TURBIDITY ODOR/COLOR/ TIME **CUMULATIVE** TEMPERATURE (°C) pΗ REMARKS (us/cm) (NTU) VOLUME (gal) 2400 hrs **PURGE START** ଷ25 0 0.368 Clace -つ,3つ 21.36 · 5-19/5 830 0,376 18,98 7.37 0 NO afor 835 9 <u>4</u>5 10.373 18,65 7,38 0 840 99/5 2.0 99/5 ひるり 0.37 3 18.57 0 845 2.39 0 2.5 gals 18.55 0.373 850 4 7,39 18,52 0.372 955 Measurement and Sampling Equipment Model # Calibration Date Manufacturer Type 9-15-12 0-23 Horiba meter 600000 Pump Geo 716h N meter Salingh 1001 BOTTLE TYPE/ ANALYTICAL SAMPLE **QA REMARKS** NUMBER METHOD **PRESERVATIVES** -16-46 Amber 42700

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Internat	tional Pa	per		8	ivironmental Chi USINESS SOLL	Monges ITIONS =		Groundwater S	Sampling Record
WELL No	1. J-08	-28	PROJECT#	02.200	00003	CATION	Joplin, I		DATE
SAMPLE	No. J-0	8-28	PROJECT NAME			LD PERSONNE	COMPANY.	ave Dafoe	
SAMPLE	TIME: 9	15	SITE Int	ernation	al Paper	LD CONDITION	CAMPATURE.		Farthcou
Well Con	dition insp	ection (circle one)		Equipment Cl	eening Pro	eriurae	50004 -	77
	(tocked)	not lo	-		- potable water	_		าลก	
number:	legible	not le	jible .		- potable water				
outer casi	ng:	Good	fair po	or	- water rinse:	distilled	9)	deionized	
inner casi	-	(000d	fair po	or	- solvent rinse:	aceton		hexane	
well photo	-	yes	<u>₹₹</u>		- air dry				
Casing Di (circle one			Casing Volume	e Calcul e (gallon	ation: (πr²h)(7.48 s/ft) for: 2" = 0.1	l gal/ft³) 63; 4" = 0.6	553; 6" = 1.	.47	
Depth to W	ater (feet):		18	107'	Me	asuring Point	Elevation (leett.	
Depth of W	ell (feet):			.11'		oundwater Su			
Water Colu	mn (feet):		1	3.04		APL present:			
Casing Volu	ume (gallons):		2.13		APL present:			
the state of the same of the s	Purge Volum	•	s):		01	marks:		<u> </u>	
	e Volume (g				ne ne	marks.			
Well Evac			***************************************						
	ualion H recovery i	e.	very slow	slow (moderate fas				
	,		Vary SiON	SIUM.	moderate las	{	Bailed dr	y: yes	no
TIME 2400 hrs	VOLUME		TEMPERATUR	IE (°C)	pH		JCTIVITY Jcm)	TURBIDITY (NTU)	ODOR/COLOR/ REMARKS
910	0	·							PURGE START
915	- 5	551	22.10	S	7.07	0	629	40.4	Clear-
920	1.0	gals	20,5	3	٧.83		644	15.0	40 080t
925	1.5	3915	20,49	5	6.82		644	68,2	FOOD
930	2,0	5915	20,5	6	6.84		648	69.4	1
935	2,5	59/5	20.5	3	6.85		650	70,0	
940		59/5	20.5		6.85				
945	3.5	acels	20.48		6,85		652	70.3	
		7-1-		<u>'</u> i	6,03	- 0.	652	70.5	

leagureme	nt and Sarr	mline F	nijomae)			ļ		4	È
Typ <i>Prie</i>	oe Her	ibinig E	Manufacturi -lor;	ba	*******************************	Model #			ration Date
<u> </u>	mp etcr	-	600 Te	<u>ch</u>		100°	mp_	^	MA
			Solin	<u> 157 </u>		100'			119
SAM! NUME			ANALYTICAL METHOD		BOTTLE T	YPE/		QA REMARK	S
J-08	1-28		名るつひと		16 Am	620	∌ (Duplicate	*
								Whitels.	-

EARTHCON.

Environmental Challenges BUSINESS SOLUTIONS *

International Paper **Groundwater Sampling Record** PROJECT LOCATION Joplin, MO WELL No. ナー13-3つ 02.20000003 PROJECT NAME SAMPLE No. ゴーバスーろつ Dove Datos Garthoon FIELD CONDITIONSWEATHER SAMPLE TIME: 1030 International Paper SUNDS 800 Well Condition inspection (circle one) **Equipment Cleaning Procedures** locked not locked potable water and phosphate-free soap number: legible not legible potable water rinse fair outer casing: (distilled DOOF water rinse: deionized good fair inner casing: DOOL solvent rinse: acetone hexane well photographed: (m) ye**s** air dry Casing Diameter: (circle one) 4 2" Casing Volume Calculation: (πr²h)(7.48 gal/ft³) Other: Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47 12.41' Depth to Water (feet): Measuring Point Elevation (feet): Depth of Well (feet): 36,78° **Groundwater Surface Elevation:** 24.37 Water Column (feet): LNAPL present: NO thickness: 15,91 Casing Volume (gattons): **DNAPL** present: NO thickness: Lowflow Calculated Purge Volume (gallons): Remarks: Actual Purge Volume (gallons): Well Evacuation Water level recovery is: very slow slow moderate (fast) Bailed dry: yes no **CUMULATIVE** CONDUCTIVITY TIME TURBIDITY ODOR/COLOR/ TEMPERATURE (°C) pН 2400 hrs VOLUME (gal) REMARKS (µs/cm) (NTU) 000 0 **PURGE START** 1005 1.0 gals 20.03 7,08 0.530 4.1 Clear -1010 2,09915 19.20 6.89 0,527 0 NO DODE 3.04415 18.98 1015 6,85 0,523 0 4.0 gals 18,95 6.84 1020 0.522 0 5.0 ssls 18,97 6.86 1025 0 0.521 18,99 6.87 0.521 1030 6,04915 Measurement and Sampling Equipment Type Manufacturer Model # Calibration Date meter Horiba **レーテュ** 7-15-12 Pump feo Tech 600 Punp Meter 501:N5+ 100 **ANALYTICAL** SAMPLE BOTTLE TYPE/ *QA REMARKS* NUMBER METHOD **PRESERVATIVES** J-13-37 82700 Amber

EARTHCON'

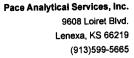
International Paper

Environmental Challenges BUSINESS SOLUTIONS

Groundwater Sampling Record

							
			100003	LOCATION	Joplin, MC	0	DA码-15-16
		PROJECT NAME		FIELD PERSONNEL	JCOMPANY D	ave Dafoe	Earthcou
		site Internation	al Paper	FIELD CONDITIONS			
		circle one)		Cleaning Proc			
(OCked	not loc	ked	- potable wa	iter and phosphi		P	
egible		ible	1	7	7	•	
ng:	9 6000	fair poor					
ng: aranbadi	4000	fair poor	1	se: acetone	a h	rexane	
	yes	(6)	- air dry				
ameter:)							
4"		-	, ,,				L
Other:	l	Casing Volume (gallor	ns/ft) for: 2" = 1	0.163; 4" = 0.6	53; 6" = 1.4	17	•
ater (feet):		10,71		Messuring Point	Flavation (fe	anti-	
eli (feet):		45.61'		<u>-</u>	•	,	
mn (feet):							
, ,	1:			•			
and in 177 and 1 of the co	•	<u> </u>		Remarks:		***************************************	
				1 ISSTITUTE TYPE	***************************************		
uation							
	s :	very slow slow	moderate	fast	Bailed dry	/: yes	no
CUMULA	ATIVE	TEMPERATURE (°C)	pH	CONDL	UCTIVITY	TURBIDITY (NTU)	ODOR/COLOR/
1 White-	≜ Him.		1	h	<i>alee</i> vii	(NIXIA)	REMARKS
 	- (800)	7		Ψ.	sicili)	(MO)	
0		2/34					PURGE START
0 . 5.	gal	21.34	7/12	3 0,	373	14.0	Slightly
0 . 5.	591 151	19,12	6,90	3 O,	373 378	14.0	Slightly two bid-
1.0 -	591 191 195/5	19,12	6,90	3 0, 6 0,	373 378 380	14.0 10,7 11,7	Slightly two bid- Slight
1.0	591 391 395	19,12 18.88 18,77	6.90 6.9- 7.00	3 0, 6 0, 7 0. 6 0,	373 378 380 380	14.0 10,7 11,7 18.8	Slightly two bid-
1.0 - 1.0 - 2.0 c	591 545 545 545	19,12 18.88 18,77 18,74	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0	591 545 545 545	19,12 18.88 18,77	6.90 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 380	14.0 10,7 11,7 18.8	Slightly two bid- Slight
1.0 - 1.0 - 2.0 c	591 545 545 545	19,12 18.88 18,77 18,74	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0 - 1.0 - 2.0 c	591 545 545 545	19,12 18.88 18,77 18,74	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0 - 1.0 - 2.0 c	591 545 545 545	19,12 18.88 18,77 18,74	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0 - 1.0 - 2.0 c	591 545 545 545	19,12 18.88 18,77 18,74	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0 d 1.7 d 2.0 d 2.5 d 3.0 d	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18.88 18,77 18,74 18,72	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1	Slightly two bid- Slight
1.0 - 1.7 - 2.0 - 3.0 -	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18.88 18,77 18,74 18,72	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0,	373 378 380 382 383	14.0 10,7 11,7 18.8 13,1 13,3	Slightly two bid- Slight
1.0 g 2.0 g 2.5 g 3.0 g 3.0 g	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 quipment Manufacturer Horiba	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0, 1 0, 12 0, 12 0, 12 0,	373 378 380 382 383 384	14.0 10,7 11,7 18.8 13,1 13,3	Slightly two bid- Slight odor
1.0 a 1.7 a 2.0 a 2.5 a 3.0 a ent and Sar	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 18,72 Manufacturer 1401260 600 7004	6.96 6.9- 7.00	3 0, 6 0, 7 0. 6 0, 1 0, 1 0, 1 0, 1 0, 1 0,	373 378 380 382 383 384	14.0 10,7 11.7 18.8 13.1 13.3 Calibrat 9-15	Slightly two bid- Slight Odor tion Date
1.0 g 2.0 g 2.5 g 3.0 g 3.0 g	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 quipment Manufacturer Horiba	6.96 6.9- 7.00	3 0, 6 0, 7 0, 6 0, 1 0, 12 0, 12 0, 12 0,	373 378 380 382 383 384	14.0 10,7 11,7 18.8 13,1 13,3	Slightly two bid- Slight Odor tion Date
1.0 a 1.7 a 2.0 a 2.5 a 3.0 a ent and Sar	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 18,72 Manufacturer 1401260 600 7004	6.96 6.97 7.00 7.00	3 0, 6 0, 7 0, 6 0, 1 0, 1 0, 1 0, 2 0, 1 0, 2 0, 1 0, 2 0, 1 0, 2 0, 1 0, 2 0, 1 0, 2 0, 1 0, 2 0, 2 0, 3 0, 4 0, 4 0, 5 0, 6 0, 6 0, 7 0, 8 0, 8 0, 8 0, 8 0, 8 0, 8 0, 8 0, 8	373 378 380 382 383 384	14.0 10,7 11.7 18.8 13.1 13.3 Calibrat 9-15	Slightly two bid- Slight odor tion Date
ent and Sar //Pe //PLE //BER	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 18,72 Guipment Manufacturer Horiba 60,7ech Solinst ANALYTICAL	6.90 6.90 7.00 7.00 80TTI PRESE	Model # U-52 Geo Pu- ILE TYPE: RVATIVES	373 378 380 382 383 384	14.0 10,7 11,7 18.8 13,1 13,3 Calibrat 9-15	Slightly two bid- Slight odor tion Date
1.0 a 1.7 a 2.0 c 2.5 c 3.0 c 3,0 c	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 18,72 Guipment Manufacturer Horiba Foreck Solivest ANALYTICAL METHOD	6.90 6.90 7.00 7.00 80TTI PRESE	Model # U-52 Geo full	373 378 380 382 383 384	14.0 10,7 11,7 18.8 13,1 13,3 Calibrat 9-15	Slightly two bid- Slight odor tion Date
ent and Sar //Pe //PLE //BER	\$ 91 3 5/5 3 9/5 3 9/5 5 9/5 5 9/5	19,12 18,88 18,77 18,74 18,72 18,72 Guipment Manufacturer Horiba Foreck Solivest ANALYTICAL METHOD	6.90 6.90 7.00 7.00 80TTI PRESE	Model # U-52 Geo Pu- ILE TYPE: RVATIVES	373 378 380 382 383 384	14.0 10,7 11,7 18.8 13,1 13,3 Calibrat 9-15	Slightly two bid- Slight odor tion Date
	No. 3-23- FIME: // fitton Inspendence of the color of the	dition inspection (cocked not lociled not leg	No. T-23-43R PROJECT NAME FIME: ///5 SITE Internation dition inspection (circle one) docked not legible not legible not le	O2.20000003 O2.20000003 O2.20000003 O2.20000003 O2.20000003 O2.20000003 O2.20000003 O2.200000003 O2.200000003 O2.200000003 O2.200000003 O2.200000003 O2.200000003 O2.200000003 O2.200000003 Equipment	O2.20000003 FIELD PERSONNEL	O2.20000003 Jopfin, Mo O2.200000003 Field Personneurous Field Conditions/Meantles Site O2.200000000 Jopfin, Mo O2.200000003 Field Conditions/Meantles O2.200000000000000000000000000000000000	O2.20000003 Joplin, MO

Appendix G
Groundwater Laboratory Reports and Data Validation for the Annual
Sampling Event





September 27, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: GW Annual IP-Joplin

Pace Project No.: 60227912

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on September 16, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60227912001	J-11-119	Water	09/14/16 09:30	09/16/16 09:10
60227912002	J-12-28	Water	09/14/16 10:30	09/16/16 09:10
60227912003	J-14-30	Water	09/14/16 11:35	09/16/16 09:10
60227912004	J-21-59	Water	09/14/16 12:30	09/16/16 09:10
60227912005	J-25-40	Water	09/14/16 13:15	09/16/16 09:10
60227912006	J-31-60R	Water	09/14/16 14:10	09/16/16 09:10
60227912007	J-49-17	Water	09/14/16 15:00	09/16/16 09:10
60227912008	J-52-17R	Water	09/14/16 15:35	09/16/16 09:10
60227912009	J-55-22	Water	09/15/16 08:00	09/16/16 09:10
60227912010	J-16-46	Water	09/15/16 08:55	09/16/16 09:10
60227912011	EQUIP BLANK	Water	09/15/16 08:10	09/16/16 09:10
60227912012	DUP 1	Water	09/15/16 08:00	09/16/16 09:10
60227912013	J-08-28	Water	09/15/16 09:45	09/16/16 09:10
60227912014	J-13-37	Water	09/15/16 10:30	09/16/16 09:10
60227912015	J-23-43R	Water	09/15/16 11:15	09/16/16 09:10



SAMPLE ANALYTE COUNT

Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Lab ID	Sample ID	Method	Analysts	Analytes Reported
60227912001	J-11-119	EPA 8270	 JMT	43
60227912002	J-12-28	EPA 8270	JMT	43
60227912003	J-14-30	EPA 8270	JMT	43
60227912004	J-21-59	EPA 8270	JMT	43
60227912005	J-25-40	EPA 8270	JMT	43
60227912006	J-31-60R	EPA 8270	JMT	43
60227912007	J-49-17	EPA 8270	JMT	43
60227912008	J-52-17R	EPA 8270	JMT	43
60227912009	J-55-22	EPA 8270	JMT	43
60227912010	J-16-46	EPA 8270	JMT	43
60227912011	EQUIP BLANK	EPA 8270	JMT	43
60227912012	DUP 1	EPA 8270	JMT	43
60227912013	J-08-28	EPA 8270	JMT	43
60227912014	J-13-37	EPA 8270	JMT	43
60227912015	J-23-43R	EPA 8270	JMT	43



PROJECT NARRATIVE

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Method:

EPA 8270

Description: 8270 MSSV Semivolatile Organic

Client:

EarthCon Site Services Inc-International Paper

Date:

September 27, 2016

General Information:

15 samples were analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 447363

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60227912001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

• MS (Lab ID: 1829990)

- Benzo(j)fluoranthene
- MSD (Lab ID: 1829991)
 - · Benzo(j)fluoranthene

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Date: 09/27/2016 02:48 PM

Sample: J-11-119	Lab ID: 602	27912001	Collected: 09/14/1	6 09:30	Received: 09)/16/16 09:10 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	nod: EPA 82	270 Preparation Met	hod: EPA	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	83-32-9	
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	208-96-8	
Anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	120-12-7	
Benzo(a)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	56-55-3	
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	50-32-8	
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	205-99-2	
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	205-82-3	M0
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	207-08-9	
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	95-15-8	
Carbazole	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	86-74-8	
4-Chloro-3-methylphenol	ND	mg/L	0.020	1	09/21/16 00:00	09/22/16 10:05	59-50-7	
2-Chlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	95-57-8	
Chrysene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	218-01-9	
Dibenz(a,h)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	53-70-3	
Dibenzofuran	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	132-64-9	
2,4-Dichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	120-83-2	
2,4-Dimethylphenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1	09/21/16 00:00	09/22/16 10:05	534-52-1	
2,4-Dinitrophenol	ND	mg/L	0.050	1	09/21/16 00:00	09/22/16 10:05	51-28-5	
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 10:05		
2,6-Dinitrotoluene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	606-20-2	
Fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	206-44-0	
Fluorene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	86-73-7	
ndeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	193-39-5	
1-Methylnaphthalene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	90-12-0	
2-Methylnaphthalene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	91-57-6	
2-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 10:05		
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05		
Naphthalene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	91-20-3	
Pentachlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	87-86-5	
Phenanthrene	ND	mg/L	0.010	1		09/22/16 10:05		
Phenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 10:05	108-95-2	
Pyrene	ND	mg/L	0.010	1		09/22/16 10:05		
2,3,4,6-Tetrachlorophenol	ND	mg/L	0.020	1	09/21/16 00:00	09/22/16 10:05	58-90-2	
2,4,5-Trichlorophenol	ND	mg/L	0.010	1			95-95-4	
2,4,6-Trichlorophenol	ND	mg/L	0.010	1		09/22/16 10:05		
Surrogates		•					-	
Nitrobenzene-d5 (S)	57	%	26-105	1	09/21/16 00:00	09/22/16 10:05	4165-60-0	
2-Fluorobiphenyl (S)	61	%	24-123	1	09/21/16 00:00	09/22/16 10:05	321-60-8	
Terphenyl-d14 (S)	67	%	43-123	1	09/21/16 00:00	09/22/16 10:05	1718-51-0	
Phenol-d6 (S)	20	%	10-63	1	09/21/16 00:00	09/22/16 10:05	13127-88-3	
2-Fluorophenol (S)	33	%	13-73	1	09/21/16 00:00	09/22/16 10:05	367-12-4	
2,4,6-Tribromophenol (S)	66	%	10-169	1		09/22/16 10:05	118-79-6	



Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Sample: J-12-28	Lab ID:	60227912002	Collected:	09/14/1	6 10:30	Received: 09	יו טר:פּט פר/פרי N	latrix: Water	
Parameters	Results	Units	Repor	t Limit	DF	Prepared	Analyzed	CAS No.	Qua
8270 MSSV Semivolatile Organic	Analytical	Method: EPA 82	270 Prepara	tion Meth	nod: EPA	A 3510			
Acenaphthene	NI			0.010	1		09/22/16 11:09		
Acenaphthylene	N	D mg/L		0.010	1		09/22/16 11:09		
Anthracene	N	D mg/L		0.010	1		09/22/16 11:09		
Benzo(a)anthracene	N	D mg/L		0.010	1		09/22/16 11:09		
Benzo(a)pyrene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	50-32-8	
Benzo(b)fluoranthene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	205-99-2	
Benzo(g,h,i)perylene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	191-24-2	
Benzo(j)fluoranthene	N	D mg/L		0.010	1		09/22/16 11:09		
Benzo(k)fluoranthene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	207-08-9	
Benzothiophene	N	D mg/L		0.010	1		09/22/16 11:09		
Carbazole	N			0.010	1		09/22/16 11:09		
4-Chloro-3-methylphenol	N	D mg/L		0.020	1		09/22/16 11:09		
2-Chlorophenol	N			0.010	1		09/22/16 11:09		
Chrysene	N	D mg/L		0.010	1		09/22/16 11:09		
Dibenz(a,h)anthracene	N	D mg/L		0.010	1		09/22/16 11:09		
Dibenzofuran	N	D mg/L		0.010	1		09/22/16 11:09		
2,4-Dichlorophenol	N	D mg/L		0.010	1		09/22/16 11:09		
2.4-Dimethylphenol	N	D mg/L		0.010	1		09/22/16 11:09		
4,6-Dinitro-2-methylphenol		D mg/L		0.050	1		09/22/16 11:09		
2,4-Dinitrophenol	N	D mg/L		0.050	1	09/21/16 00:00	09/22/16 11:09	51-28-5	
2,4-Dinitrotoluene	N	D mg/L		0.010	1		09/22/16 11:09		
2.6-Dinitrotoluene		D mg/L		0.010	1		09/22/16 11:09		
Fluoranthene		ID mg/L		0.010	1		09/22/16 11:09		
Fluorene		ID mg/L		0.010	1		09/22/16 11:09		
Indeno(1,2,3-cd)pyrene	N	ID mg/L		0.010	1		09/22/16 11:09		
1-Methylnaphthalene		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	90-12-0	
2-Methylnaphthalene		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	91-57-6	
2-Methylphenol(o-Cresol)		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	95-48-7	
3&4-Methylphenol(m&p Cresol)		ID mg/L		0.010	1		09/22/16 11:09		
Naphthalene		ID mg/L		0.010	1		09/22/16 11:09		
Pentachlorophenol		ID mg/L		0.010	1		09/22/16 11:09		
Phenanthrene		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	85-01-8	
Phenol		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	108-95-2	
Pyrene		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	129-00-0	
2,3,4,6-Tetrachlorophenol		ID mg/L		0.020	1	09/21/16 00:00	09/22/16 11:09	58-90-2	
2,4,5-Trichlorophenol		ND mg/L		0.010	1		09/22/16 11:09		
2,4,6-Trichlorophenol		ND mg/L		0.010	1	09/21/16 00:00	09/22/16 11:09	88-06-2	
Surrogates	,								
Nitrobenzene-d5 (S)		61 %		26-105	1		09/22/16 11:09		
2-Fluorobiphenyl (S)		68 %		24-123	1		09/22/16 11:09		
Terphenyl-d14 (S)		73 %		43-123	1		09/22/16 11:09		
Phenol-d6 (S)		22 %		10-63	1		09/22/16 11:09		
2-Fluorophenol (S)		34 %		13-73	1		09/22/16 11:09		
2,4,6-Tribromophenol (S)		76 %		10-169		09/21/16 00:00	09/22/16 11:09	9 118-79-6	



Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Sample: J-14-30	Lab ID: 602	27912003	Collected: 09/14/	16 11:35	Received: 0	9/16/16 09:10	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
8270 MSSV Semivolatile Organic	Analytical Met	hod: EPA 82	70 Preparation Met	hod: EPA	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:3	1 83-32-9	
Acenaphthylene	ND	mg/L	0.010	1		09/22/16 11:3		
Anthracene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(a)anthracene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(a)pyrene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(b)fluoranthene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(g,h,i)perylene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(j)fluoranthene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzo(k)fluoranthene	ND	mg/L	0.010	1		09/22/16 11:3		
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00			
Carbazole	ND	mg/L	0.010	1	09/21/16 00:00			
4-Chloro-3-methylphenol	ND	mg/L	0.020	1	09/21/16 00:00			
2-Chlorophenol	ND .	mg/L	0.010	1	09/21/16 00:00			
Chrysene	ND	mg/L	0.010	1	09/21/16 00:00	_		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1				
Dibenzofuran	ND	mg/L	0.010	1	09/21/16 00:00			
2,4-Dichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00			
2,4-Dimethylphenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:3	1 120-83-2	
1,6-Dinitro-2-methylphenol	ND	mg/L	0.010	1	09/21/16 00:00			
2,4-Dinitrophenol	ND	mg/L	0.050	1	09/21/16 00:00			
2,4-Dinitrotoluene	ND	mg/L	0.030	1	09/21/16 00:00			
2,6-Dinitrotoluene	ND	_			09/21/16 00:00			
Fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00			
Fluorene	ND	mg/L	0.010	1	09/21/16 00:00			
ndeno(1,2,3-cd)pyrene	ND ND	mg/L	0.010	1	09/21/16 00:00			
I-Methylnaphthalene	ND	mg/L	0.010	1	09/21/16 00:00			
2-Methylnaphthalene	ND ND	mg/L	0.010	1	09/21/16 00:00			
2-Methylphenol(o-Cresol)	ND ND	mg/L	0.010		09/21/16 00:00			
8&4-Methylphenol(m&p Cresol)		mg/L	0.010		09/21/16 00:00			
Naphthalene	ND	mg/L	0.010		09/21/16 00:00			
Pentachlorophenol	ND ND	mg/L	0.010		09/21/16 00:00			
Phenanthrene	ND ND	mg/L	0.010		09/21/16 00:00			
Phenol	ND ND	mg/L	0.010		09/21/16 00:00			
Pyrene	ND ND	mg/L	0.010		09/21/16 00:00			
3,4,6-Tetrachlorophenol	ND ND	mg/L	0.010		09/21/16 00:00			
,3,4,5-Trichlorophenol	ND	mg/L	0.020		09/21/16 00:00			
,4,6-Trichlorophenol	ND	mg/L	0.010		09/21/16 00:00			
;4,o-Trichiorophenoi Currogates	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:31	88-06-2	
litrobenzene-d5 (S)	61	%	26 105	4	00/04/46 00:00	00/00/40 44 54	4407.00.0	
-Fluorobiphenyl (S)	66	% %	26-105		09/21/16 00:00			
erphenyl-d14 (S)	70	% %	24-123		09/21/16 00:00			
henol-d6 (S)	70 21		43-123		09/21/16 00:00			
-Fluorophenol (S)	33	% %	10-63		09/21/16 00:00			
,4,6-Tribromophenol (S)			13-73		09/21/16 00:00			
,=,o-minomiophenol(a)	75	%	10-169	1 (09/21/16 00:00	09/22/16 11:31	118-79-6	



Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

		0227912004	Collected: 09/14/		Received: 09		latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical M	ethod: EPA 82	270 Preparation Met	hod: EPA	\ 3510			
Acenaphthene	ND	mg/L	0.010	1		09/22/16 11:52		
Acenaphthylene	ND	mg/L	0.010	1		09/22/16 11:52		
Anthracene	ND	mg/L	0.010	1		09/22/16 11:52		
Benzo(a)anthracene	ND	mg/L	0.010	1		09/22/16 11:52		
Benzo(a)pyrene	ND	mg/L	0.010	1		09/22/16 11:52		
Benzo(b)fluoranthene	ND	mg/L	0.010	1		09/22/16 11:52		
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	205-82-3	
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	207-08-9	
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	95-15-8	
Carbazole	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	86-74-8	
4-Chloro-3-methylphenol	ND	mg/L	0.020	1	09/21/16 00:00	09/22/16 11:52	59-50-7	
2-Chlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	95-57-8	
Chrysene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	218-01-9	
Dibenz(a,h)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	53-70-3	
Dibenzofuran	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	132-64-9	
2,4-Dichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	120-83-2	
2,4-Dimethylphenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	105-67-9	
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1		09/22/16 11:52		
2,4-Dinitrophenol	ND	mg/L	0.050	1		09/22/16 11:52		
2.4-Dinitrotoluene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 11:52	121-14-2	
2.6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 11:52		
Fluoranthene	ND	mg/L	0.010	1		09/22/16 11:52		
Fluorene	ND	mg/L	0.010	1		09/22/16 11:52		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 11:52		
1-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 11:52		
2-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 11:52		
2-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 11:52		
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010	1		09/22/16 11:52		
Naphthalene	ND	mg/L	0.010	1		09/22/16 11:52		
•	ND	mg/L	0.010	1		09/22/16 11:52		
Pentachlorophenol	ND	mg/L	0.010	1		09/22/16 11:52		
Phenal	ND	mg/L	0.010	1		09/22/16 11:52		
Phenol	ND	mg/L	0.010	1		09/22/16 11:52		
Pyrene	ND	mg/L	0.020			09/22/16 11:52		
2,3,4,6-Tetrachlorophenol	ND ND	mg/L	0.010	1		09/22/16 11:52		
2,4,5-Trichlorophenol	ND ND	mg/L	0.010			09/22/16 11:52		
2,4,6-Trichlorophenol Surrogates	NU	my/L	0.010	'	30,2 11 10 00.00	30,22,10 11.02		
Nitrobenzene-d5 (S)	63	%	26-105	1	09/21/16 00:00	09/22/16 11:52	4165-60-0	
2-Fluorobiphenyl (S)	66		24-123			09/22/16 11:52		
Terphenyl-d14 (S)	75		43-123			09/22/16 11:52		
Phenol-d6 (S)	25		10-63			09/22/16 11:52		
2-Fluorophenol (S)	37	% %	13-73			09/22/16 11:52		
	31	/0	10-70	•	09/21/16 00:00			



Project: GW Annual IP-Joplin

Pace Project No.: 60227912

Date: 09/27/2016 02:48 PM

Sample: J-25-40	Lab ID: 602	27912005	Collected: 09/14/1	16 13:15	Received: 09	9/16/16 09:10 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	od: EPA 82	70 Preparation Met	hod: EP/	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	83-32-9	
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	208-96-8	
Anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	120-12-7	
Benzo(a)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	56-55-3	
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	50-32-8	
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	205-99-2	
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	205-82-3	
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	207-08-9	
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:13	95-15-8	
Carbazole	ND	mg/L	0.010	1		09/22/16 12:13		
4-Chloro-3-methylphenol	ND.	mg/L	0.020	1		09/22/16 12:13		
2-Chlorophenol	ND	mg/L	0.010	1		09/22/16 12:13		
Chrysene	ND	mg/L	0.010	1		09/22/16 12:13		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1		09/22/16 12:13		
Dibenzofuran	ND	mg/L	0.010	1		09/22/16 12:13		
2,4-Dichlorophenol	ND	mg/L	0.010	1		09/22/16 12:13		
2,4-Dimethylphenol	ND	mg/L	0.010	1		09/22/16 12:13		
4,6-Dinitro-2-methylphenol	ND	mg/L	0.051	1		09/22/16 12:13		
2,4-Dinitrophenol	ND	mg/L	0.051	1		09/22/16 12:13		
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 12:13		
2,6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 12:13		
Fluoranthene	ND	mg/L	0.010	1		09/22/16 12:13		
Fluorene	ND	mg/L	0.010	1		09/22/16 12:13		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 12:13		
1-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 12:13		
2-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 12:13		
2-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 12:13		
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010	1		09/22/16 12:13	90-40-7	
Naphthalene	ND	mg/L	0.010	1		09/22/16 12:13	01 20 2	
Pentachlorophenol	ND	mg/L	0.010	1		09/22/16 12:13		
Phenanthrene	ND	mg/L	0.010	1		09/22/16 12:13		
Phenol	ND	mg/L	0.010	1				
Pyrene	ND ND	mg/L	0.010	1		09/22/16 12:13 09/22/16 12:13		
2,3,4,6-Tetrachlorophenol	ND ND	mg/L	0.010	1		09/22/16 12:13		
2,4,5-Trichlorophenol	ND	mg/L	0.020	1				
2,4,6-Trichlorophenol	ND ND	mg/L	0.010	1		09/22/16 12:13		
Surrogates	ND	mg/L	0.010	'	09/21/10 00:00	09/22/16 12:13	00-00-2	
Nitrobenzene-d5 (S)	58	%	26-105	1	09/21/16 00:00	09/22/16 12:13	4165-60-0	
2-Fluorobiphenyl (S)	61	%	24-123	1		09/22/16 12:13		
Terphenyl-d14 (S)	73	%	43-123	1		09/22/16 12:13		
Phenol-d6 (S)	23	%	10-63	1		09/22/16 12:13		
2-Fluorophenol (S)	35	%	13-73	1		09/22/16 12:13		
2,4,6-Tribromophenol (S)	72	%	10-169	1		09/22/16 12:13		



Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Sample: J-31-60R	Lab ID:	60227912006	Collected:	09/14/1	6 14:10	Received: 09	716/16 U9:10 N	latrix: Water	
Parameters	Results	Units	Report	Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical	Method: EPA 82	270 Preparat	ion Meth	nod: EPA	\ 3510			
Acenaphthene	NI	O mg/L		0.010	1	09/21/16 00:00			
Acenaphthylene	NI	D mg/L		0.010	1	09/21/16 00:00			
Anthracene	NI	D mg/L		0.010	1	09/21/16 00:00			
Benzo(a)anthracene	NI	D mg/L		0.010	1	09/21/16 00:00			
Benzo(a)pyrene	N	D mg/L		0.010	1	09/21/16 00:00			
Benzo(b)fluoranthene	N	D mg/L		0.010	1		09/22/16 12:56		
Benzo(g,h,i)perylene	N	D mg/L		0.010	1		09/22/16 12:56		
Benzo(j)fluoranthene	N	D mg/L		0.010	1		09/22/16 12:56		
Benzo(k)fluoranthene	N	D mg/L		0.010	1		09/22/16 12:56		
Benzothiophene	N	D mg/L		0.010	1		09/22/16 12:56		
Carbazole	N	D mg/L		0.010	1		09/22/16 12:56		
4-Chloro-3-methylphenol	N	D mg/L		0.020	1		09/22/16 12:56		
2-Chiorophenol	N			0.010	1		09/22/16 12:56		
Chrysene	N	D mg/L		0.010	1		09/22/16 12:56		
Dibenz(a,h)anthracene	N	_		0.010	1		09/22/16 12:56		
Dibenzofuran	N	D mg/L		0.010	1		09/22/16 12:56		
2,4-Dichlorophenol	N	*		0.010	1		09/22/16 12:56		
2,4-Dimethylphenol	N	-		0.010	1		09/22/16 12:56		
4,6-Dinitro-2-methylphenol	N	_		0.050	1	09/21/16 00:00	09/22/16 12:56	534-52-1	
2,4-Dinitrophenol	N	_		0.050	1		09/22/16 12:56		
2,4-Dinitrotoluene		D mg/L		0.010	1		09/22/16 12:56		
2,6-Dinitrotoluene	N	D mg/L		0.010	1		09/22/16 12:56		
Fluoranthene		D mg/L		0.010	1		09/22/16 12:56		
Fluorene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	86-73-7	
Indeno(1,2,3-cd)pyrene		D mg/L		0.010	1		09/22/16 12:56		
1-Methylnaphthalene		D mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	90-12-0	
2-Methylnaphthalene		D mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	91-57-6	
2-Methylphenol(o-Cresol)		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	95-48-7	
3&4-Methylphenol(m&p Cresol)		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	i	
Naphthalene		iD mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	91-20-3	
Pentachlorophenol		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	87-86-5	
Phenanthrene		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	85-01-8	
Phenol		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	108-95-2	
		ID mg/L		0.010	1		09/22/16 12:56		
Pyrene 2,3,4,6-Tetrachlorophenol		ID mg/L		0.020	1		09/22/16 12:56		
2,4,5-Trichlorophenol		ID mg/L		0.010	1		09/22/16 12:56		
•		ID mg/L		0.010	1	09/21/16 00:00	09/22/16 12:56	88-06-2	
2,4,6-Trichlorophenol Surrogates					•				
Nitrobenzene-d5 (S)	(62 %		26-105	1		09/22/16 12:56		
2-Fluorobiphenyl (S)		67 %		24-123	1		09/22/16 12:56		
Terphenyl-d14 (S)		77 %		43-123	1	09/21/16 00:00	09/22/16 12:56	3 1718-51-0	
Phenol-d6 (S)		24 %		10-63	1		09/22/16 12:56		
2-Fluorophenol (S)		37 %		13-73	1		09/22/16 12:56		
2.4.6-Tribromophenol (S)		76 %		10-169	1	09/21/16 00:00	09/22/16 12:56	3 118-79-6	



Project:

GW Annual IP-Joplin

Pace Project No.:

Date: 09/27/2016 02:48 PM

60227912

Sample: J-49-17	Lab ID: 602	27912007	Collected: 09/14/	16 15:00	Received: 09	9/16/16 09:10	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
3270 MSSV Semivolatile Organic	Analytical Meth	nod: EPA 82	70 Preparation Met	hod: EPA	3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 13:18	83-32-9	
Acenaphthylene	ND	mg/L	0.010	1		09/22/16 13:18		
Anthracene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(a)anthracene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(a)pyrene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(b)fluoranthene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(g,h,i)perylene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(j)fluoranthene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzo(k)fluoranthene	ND	mg/L	0.010	1		09/22/16 13:18		
Benzothiophene	ND	mg/L	0.010	1		09/22/16 13:18		
Carbazole	ND	mg/L	0.010	1		09/22/16 13:18		
-Chloro-3-methylphenol	ND.	mg/L	0.020	1		09/22/16 13:18		
-Chlorophenol	ND	mg/L	0.010	1		09/22/16 13:18		
Chrysene	ND	mg/L	0.010	1		09/22/16 13:18		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1		09/22/16 13:18		
Dibenzofuran	ND	mg/L	0.010	1		09/22/16 13:18		
,4-Dichlorophenol	ND	mg/L	0.010	1		09/22/16 13:18		
,4-Dimethylphenol	ND	mg/L	0.010	1		09/22/16 13:18		
,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1		09/22/16 13:18		
,4-Dinitrophenol	ND	mg/L	0.050	1		09/22/16 13:18		
,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 13:18		
,6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 13:18		
luoranthene	ND	mg/L	0.010	1		09/22/16 13:18		
luorene	ND	mg/L	0.010	1		09/22/16 13:18		
ndeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 13:18		
-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 13:18		
-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 13:18		
-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 13:18		
&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010				95 -4 8-7	
aphthalene	ND	mg/L	0.010	1	09/21/16 00:00		04 00 0	
entachlorophenol	ND	mg/L	0.010	1		09/22/16 13:18		
henanthrene	ND	mg/L	0.010	1		09/22/16 13:18		
henol	ND	mg/L	0.010			09/22/16 13:18		
yrene	ND	mg/L				09/22/16 13:18		
3,4,6-Tetrachlorophenol	ND	mg/L	0.010			09/22/16 13:18		
4,5-Trichlorophenol	ND	mg/L	0.020 0.010			09/22/16 13:18		
4,6-Trichlorophenol	ND	mg/L				09/22/16 13:18		
urrogates	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 13:18	88-06-2	
itrobenzene-d5 (S)	60	%	26-105	1	00/21/16 00:00	09/22/16 13:18	4165 60 0	
Fluorobiphenyl (S)	66	%	24-123			09/22/16 13:18		
erphenyl-d14 (S)	72	%	43-123					
henol-d6 (S)	23	%	10-63	-		09/22/16 13:18		
		% %				09/22/16 13:18		
Fluorophenol (S)	35		13-73			09/22/16 13:18		



Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Date: 09/27/2016 02:48 PM

Lab ID: 60	227912008	Collected: 09/14/	16 15:35	Received: 09/	M טו:פט סוי/סוי	autx. VValet	
Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Analytical Me	ethod: EPA 82	270 Preparation Met	hod: EP/				
ND	mg/L	0.010	1				
ND	mg/L	0.010		09/21/16 00:00	09/23/16 12:39	208-96-8	
ND	mg/L	0.010		09/21/16 00:00	09/23/16 12:39	120-12-7	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	56-55-3	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	50-32-8	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	205-99-2	
ND	mg/L	0.010	1				
ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 13:39	205-82-3	
ND	mg/L	0.010	1				
ND	mg/L	0.010	1				
ND	mg/L	0.010	1				
ND	mg/L	0.020	1				
ND		0.010	1	09/21/16 00:00	09/23/16 12:39	95-57-8	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	218-01-9	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	53-70-3	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	132-64-9	
ND	mg/L	0.010	1	09/21/16 00:00	09/23/16 12:39	120-83-2	
		0.010	1	09/21/16 00:00	09/23/16 12:39	105-67-9	
ND		0.051	1	09/21/16 00:00	09/23/16 12:39	534-52-1	
		0.051	1	09/21/16 00:00	09/23/16 12:39	51-28-5	
	_	0.010	1	09/21/16 00:00	09/23/16 12:39	121-14-2	
	-	0.010	1	09/21/16 00:00	09/23/16 12:39	606-20-2	
		0.010	1				
	_	0.010	1	09/21/16 00:00	09/23/16 12:39	86-73-7	
	-	0.010	1				
	_	0.010	1	09/21/16 00:00	09/23/16 12:39	90-12-0	
		0.010	1	09/21/16 00:00	09/23/16 12:39	91-57-6	
		0.010) 1				
	-	0.010) 1				
	-	0.010) 1				
	_	0.010) 1	09/21/16 00:00	09/23/16 12:39	87-86-5	
	-	0.010) 1	09/21/16 00:00	09/23/16 12:39	85-01-8	
	_			09/21/16 00:00	09/23/16 12:39	108-95-2	
				09/21/16 00:00	09/23/16 12:39	129-00-0	
	_			09/21/16 00:00	09/23/16 12:39	58-90-2	
	_			09/21/16 00:00	09/23/16 12:39	95-95-4	
	_						
140	g/L	5.011					
58	%	26-105	5 1				
				09/21/16 00:00	09/23/16 12:39	321-60-8	
		43-123	3 1	09/21/16 00:00	09/23/16 12:39	1718-51-0	
				09/21/16 00:00	09/23/16 12:39	13127-88-3	
				09/21/16 00:00	09/23/16 12:39	367-12-4	
70	70	10-10					
	Results Analytical Mo ND	Analytical Method: EPA 82 ND mg/L ND	Results	Results	Results	Results	Results



Project:

GW Annual IP-Joplin

Pace Project No.:

Date: 09/27/2016 02:48 PM

60227912

Sample: J-55-22	Lab ID: 602	227912009	Collected: 09/15/	16 08:00	Received: 0	9/16/16 09:10	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Met	hod: EPA 82	270 Preparation Met	thod: EP	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:0	0 83-32-9	
Acenaphthylene	ND	mg/L	0.010	1		09/22/16 14:00		
Anthracene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(a)anthracene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(a)pyrene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(b)fluoranthene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(g,h,i)perylene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(j)fluoranthene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzo(k)fluoranthene	ND	mg/L	0.010	1		09/22/16 14:00		
Benzothiophene	ND	mg/L	0.010	1		09/22/16 14:00		
Carbazole	ND	mg/L	0.010	1		09/22/16 14:00		
4-Chloro-3-methylphenol	ND	mg/L	0.020	1		09/22/16 14:00		
2-Chlorophenol	ND	mg/L	0.010	1		09/22/16 14:00		
Chrysene	ND	mg/L	0.010	1		09/22/16 14:00		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1		09/22/16 14:00		
Dibenzofuran	ND	mg/L	0.010	1		09/22/16 14:00		
2,4-Dichlorophenol	ND	mg/L	0.010	1		09/22/16 14:00		
2,4-Dimethylphenol	ND	mg/L	0.010	1		09/22/16 14:00		
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1		09/22/16 14:00		
2,4-Dinitrophenol	ND	mg/L	0.050	1		09/22/16 14:00		
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 14:00		
2,6-Dinitrotoluene	ND	mg/L	0.010	1				
Fluoranthene	ND	mg/L	0.010	1		09/22/16 14:00		
Fluorene	ND	mg/L	0.010	1		09/22/16 14:00		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 14:00		
1-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 14:00		
2-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 14:00		
2-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 14:00		
3&4-Methylphenol(m&p Cresol)	ND	mg/L				09/22/16 14:00		
Naphthalene	ND	mg/L	0.010 0.010	1 1		09/22/16 14:00		
Pentachlorophenol	ND	mg/L	0.010			09/22/16 14:00		
Phenanthrene	ND	_		1		09/22/16 14:00		
Phenol	ND	mg/L mg/L	0.010	1		09/22/16 14:00		
Pyrene	ND	-	0.010		09/21/16 00:00			
2,3,4,6-Tetrachlorophenol	ND	mg/L mg/L	0.010 0.020		09/21/16 00:00			
2,4,5-Trichlorophenol	ND ND	mg/L			09/21/16 00:00			
2,4,6-Trichlorophenol	ND	-	0.010		09/21/16 00:00			
Surrogates	(40	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:00	88-06-2	
Nitrobenzene-d5 (S)	61	%	26-105	1	00/21/16 00:00	00/00/46 44:00	4465.00.0	
2-Fluorobiphenyl (S)	66	%	24-123		09/21/16 00:00			
Terphenyl-d14 (S)	73	% %	43-123	1	09/21/16 00:00	09/22/16 14:00	321-60-8	
Phenol-d6 (S)	25	% %	43-123 10-63		09/21/16 00:00			
2-Fluorophenol (S)	37	%	13-73		09/21/16 00:00			
, , ,					09/21/16 00:00			
.,-,o moromophenoi (o)	75	%	10-169	1	09/21/16 00:00	09/22/16 14:00	118-79-6	
2,4,6-Tribromophenol (S)	75	%	10-169		09/21/16 00:00			



Project:

GW Annual IP-Joplin

Sample: J-16-46	Lab ID: 602	27912010	Collected: 09/15/1	16 08:55	Received: 09/	16/16 09:10	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
3270 MSSV Semivolatile Organic	Analytical Met	hod: EPA 82	70 Preparation Met	hod: EP/	3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00			
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00			
Anthracene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzo(a)anthracene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:22	2 191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00			
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00			
Carbazole	ND	mg/L	0.010	1	09/21/16 00:00			
4-Chloro-3-methylphenol	ND	mg/L	0.020	1	09/21/16 00:00	09/22/16 14:22	2 59-50-7	
2-Chlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:2:	2 95-57-8	
Chrysene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:2:	2 218-01-9	
Dibenz(a,h)anthracene	ND	mg/L	0.010	1	09/21/16 00:00			
Dibenzofuran	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:2:	2 132-64-9	
	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:2:	2 120-83-2	
2,4-Dichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:2	2 105-67-9	
2,4-Dimethylphenol	ND	mg/L	0.050	1	09/21/16 00:00			
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1	09/21/16 00:00			
2,4-Dinitrophenol	ND	mg/L	0.010	1	09/21/16 00:00			
2,4-Dinitrotoluene	ND	mg/L	0.010	1	09/21/16 00:00			
2,6-Dinitrotoluene	ND ND	mg/L	0.010	1	09/21/16 00:00			
Fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00			
Fluorene	ND	mg/L	0.010	1	09/21/16 00:00			
Indeno(1,2,3-cd)pyrene	ND ND	mg/L	0.010	1	09/21/16 00:00			
1-Methylnaphthalene	ND	mg/L	0.010		09/21/16 00:00			
2-Methylnaphthalene	ND	mg/L	0.010		09/21/16 00:00			
2-Methylphenol(o-Cresol)	ND	mg/L	0.010		09/21/16 00:00			
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010		09/21/16 00:00			
Naphthalene	ND	mg/L	0.010		09/21/16 00:00			
Pentachlorophenoi	ND	mg/L	0.010		09/21/16 00:00			
Phenanthrene	ND	mg/L	0.010		09/21/16 00:00			
Phenol	ND	mg/L	0.010		09/21/16 00:00			
Pyrene	ND	mg/L	0.020			09/22/16 14:2		
2,3,4,6-Tetrachlorophenol	ND	mg/L	0.010			09/22/16 14:2		
2,4,5-Trichlorophenol	ND	mg/L	0.010			09/22/16 14:2		
2,4,6-Trichlorophenol	140	mg/L	5.510	•				
Surrogates Nitrobenzene-d5 (S)	69	%	26-105	1		09/22/16 14:2		
2-Fluorobiphenyl (S)	75	%	24-123		09/21/16 00:00	09/22/16 14:2	2 321-60-8	
Terphenyl-d14 (S)	79	%	43-123			09/22/16 14:2		
Phenol-d6 (S)	27	%	10-63				2 13127-88-3	
• •	41	%	13-73			09/22/16 14:2		
2-Fluorophenol (S) 2,4,6-Tribromophenol (S)	82	%	10-169			09/22/16 14:2		



Project:

GW Annual IP-Joplin

Pace Project No.:

Date: 09/27/2016 02:48 PM

60227912

### Rand Micro Preparation Method: EPA \$270 Preparation Method: EPA \$310 Acenaphthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 30-32-9 Acenaphthylene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-96-8 Anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-96-8 Anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-96-8 Benzzo(a)pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-32-8 Benzzo(a)pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-32-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-92-2 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-82-3 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-82-3 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-82-3 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-82-3 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-82-3 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 39-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 39-15-8 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 39-15-8 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 39-50-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Dibenz(a,h)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 35-00-7 Carbazole	Sample: EQUIP BLANK	Lab ID: 602	27912011	Collected: 09/15/1	16 08:10	Received: 09	9/16/16 09:10	Matrix: Water	
Acenaphthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 83-32-9 Acenaphthylene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 202-96-8 Anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 202-92-16 Benzo(a)pryene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 25-32-8 Benzo(gh)Uprene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 25-32-8 Benzo(gh)Uprene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 205-32-8 Benzo(gh)Uprene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 207-82-8 Benzo(th)Iprene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 207-82-8 Benzo(th)Iprene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 207-82-8	Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qua
Acenaphthylene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-98-8 Anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-98-8 Benzzo(a)pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 208-98-8 Benzzo(a)pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-53-28 Benzzo(a)pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-53-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-53-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 50-53-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 191-24-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 191-24-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 191-24-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 191-24-28 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 195-15-8 Benzzo(b)fluoranthene N	8270 MSSV Semivolatile Organic	Analytical Met	hod: EPA 82	270 Preparation Met	hod: EP/	A 3510			-
Acenaphthylene ND mg/L 0.010 1 0.9921/16 00:00 0.9022/16 14:43 20-012-7	Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 14:43	83-32-9	
Benzo(a)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 55:35:3	Acenaphthylene	ND	mg/L	0.010	1				
Benzo(a)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 56:55-3	Anthracene	ND	mg/L	0.010	1				
Benzo(a)pyrene	Benzo(a)anthracene	ND	mg/L	0.010	1				
Benzo(l) fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 205-99.2	Benzo(a)pyrene	ND	mg/L	0.010	1				
Benzo(gh,i)perylene	Benzo(b)fluoranthene	ND	mg/L	0.010	1				
Benzo(l)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 20:5-82-3	Benzo(g,h,i)perylene	ND	mg/L						
Benzotk)fluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 207-08-9	Benzo(j)fluoranthene	ND	mg/L						
Benzothiophene	Benzo(k)fluoranthene	ND	•						
Carbazole ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 86-74-8 4-Chloro-3-methylphenol ND mg/L 0.020 1 09/21/16 00:00 09/22/16 14:43 59-50-7 09/22/16 14:43 59-	Benzothiophene	ND	_						
4-Chloro-3-methylphenol ND mg/L 0.020 1 09/21/16 00:00 09/22/16 14:43 59-50-7 2-Chlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-57-8 02-6 ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-57-8 02-6 ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 128-01-9 02-4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 02-4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 02-4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 120-63-2 02-4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 120-63-2 02-4-Dichlorophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 150-67-9 02-4-Dichlorophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 151-68-5 02-4-Dinitrophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-5 02-4-Dinitrophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-5 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-2 02-4-Dinitrophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 121-14-	Carbazole		•						
2-Chlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-57-8 Chrysene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-57-8 Dibenz(a,h)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 218-01-9 Dibenzofuran ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 24-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 24-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 24-Dinitrophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 152-64-9 24-Dinitrophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 152-65-1 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/16 00:00 09/22/16 14:43 151-85-1-0 1 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/16 00:00 09/22/16 14:43 151-85-1-0 1 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/16 00:00 09/22/16 14:43 151-85-1-0 1 0.050 1 09/21/16 00:00 09/22/16 14:43 151-85-1 1 09/21/	4-Chloro-3-methylphenol		-						
Chrysene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 218-01-9 Dibenz(a,h)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 218-01-9 Dibenzofuran ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9 2,4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 105-67-9 2,4-Dichlorophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 105-67-9 4,6-Dinitro-2-methylphenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 105-67-9 4,6-Dinitro-2-methylphenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 105-67-9 2,4-Dinitrotoluene ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 51-28-5 2,4-Dinitrotoluene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 51-28-5 2,4-Dinitrotoluene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 606-20-2 Pluoranthene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 206-44-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 206-44-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 206-44-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 90-12-0 Pluorene ND mg/L 0.010 1 09/21/16 00:0	· · ·		•				-		
Dibenz(a,h)anthracene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 53-70-3	Chrysene		-						
Dibenzofuran ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 132-64-9	Dibenz(a,h)anthracene		•		-				
2,4-Dichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 105-67-9 4,6-Dinitro-2-methylphenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 534-52-1 2,4-Dinitrophenol ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 534-52-1 2,4-Dinitrotoluene ND mg/L 0.050 1 09/21/16 00:00 09/22/16 14:43 51-28-5 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 12-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00 09/22/16 14:43 10-14-2 1 0.050 1 09/21/16 00:00					-				
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Phenanthrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 85-01-8 Phenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 85-01-8 Phenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 108-95-2 Pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 129-00-0 12,3,4,6-Tetrachlorophenol ND mg/L 0.020 1 09/21/16 00:00 09/22/16 14:43 58-90-2 12,4,5-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-95-4 12,4,6-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 88-06-2 13 Surrogates Surrogates Surrogates 109/21/16 00:00 09/22/16 14:43 4165-60-0 12-Fluorophenol Surrogates 109/21/16 00:00 09/22/16 14:43 321-60-8 14-60-10 14	•								
Phenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 108-95-2 ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 108-95-2 ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 129-00-0 09	•		•						
Pyrene ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 129-00-0 2.3,4,6-Tetrachlorophenol ND mg/L 0.020 1 09/21/16 00:00 09/22/16 14:43 58-90-2 2.4,5-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-95-4 2.4,6-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 88-06-2 Surrogates Surrogates Sitrobenzene-d5 (S) 75 % 26-105 1 09/21/16 00:00 09/22/16 14:43 4165-60-0 2-Fluorophenol (S) 77 % 24-123 1 09/21/16 00:00 09/22/16 14:43 321-60-8 (Sephenyl-d14 (S) 84 % 43-123 1 09/21/16 00:00 09/22/16 14:43 1718-51-0					•				
2.3,4,6-Tetrachlorophenol ND mg/L 0.020 1 09/21/16 00:00 09/22/16 14:43 58-90-2 2.4,5-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-95-4 2.4,6-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 88-06-2 3			-						
2.4,5-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 95-95-4 2.4,6-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 88-06-2 Surrogates Sitrobenzene-d5 (S) 75 % 26-105 1 09/21/16 00:00 09/22/16 14:43 4165-60-0 2Fluorobiphenyl (S) 77 % 24-123 1 09/21/16 00:00 09/22/16 14:43 321-60-8 [Serphenyl-d14 (S) 84 % 43-123 1 09/21/16 00:00 09/22/16 14:43 1718-51-0	•				-				
2.4,6-Trichlorophenol ND mg/L 0.010 1 09/21/16 00:00 09/22/16 14:43 88-06-2 Surrogates litrobenzene-d5 (S) 75 % 26-105 1 09/21/16 00:00 09/22/16 14:43 4165-60-0 1-Fluorobiphenyl (S) 77 % 24-123 1 09/21/16 00:00 09/22/16 14:43 321-60-8 1-Fluorobiphenyl-d14 (S) 84 % 43-123 1 09/21/16 00:00 09/22/16 14:43 1718-51-0	•		-						
Surrogates Surrogates Surr	•		•						
Vitrobenzene-d5 (S) 75 % 26-105 1 09/21/16 00:00 09/22/16 14:43 4165-60-0 1-Fluorobiphenyl (S) 77 % 24-123 1 09/21/16 00:00 09/22/16 14:43 321-60-8 1-10 1-10 1-10 1-10 1-10 1-10 1-10 1	· · · · · · · · · · · · · · · · · · ·	IND	mg/L	0.010	1	09/21/16 00:00	U9/22/16 14:43	8-06-2	
2-Fluorobiphenyl (S) 77 % 24-123 1 09/21/16 00:00 09/22/16 14:43 321-60-8 ferphenyl-d14 (S) 84 % 43-123 1 09/21/16 00:00 09/22/16 14:43 1718-51-0		75	%	26-105	1	00/21/16 00:00	00/00/46 4 4:40	4405.00.0	
erphenyl-d14 (S) 84 % 43-123 1 09/21/16 00:00 09/22/16 14:43 1718-51-0					-				
10 120 1 00:00 00:02:10 14:45 1710-51-0					-				
UNIOLOG DE 101 - 100 - 1	Phenol-d6 (S)	29	% %	43-123 10-63					
10 00 1 00/2/10 04/45 1312/-00-0	` '								
-Fluorophenol (S) 45 % 13-73 1 09/21/16 00:00 09/22/16 14:43 367-12-4 ,4,6-Tribromophenol (S) 86 % 10-169 1 09/21/16 00:00 09/22/16 14:43 118-79-6	, , ,								



Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Sample: DUP 1	Lab ID:	60227912012	Collected:	09/15/	16 08:00	Received: 09	/16/16 09:10	Matrix: Water	
Parameters	Results	Units	Repor	t Limit	DF	Prepared	Analyzed	CAS No.	Qua
3270 MSSV Semivolatile Organic	Analytical	Method: EPA 82	270 Prepara	tion Met	hod: EPA	3510			
Acenaphthene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 83-32-9	
Acenaphthylene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 208-96-8	
Anthracene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 120-12-7	
Benzo(a)anthracene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 56-55-3	
Benzo(a)pyrene	N	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 50-32-8	
Benzo(b)fluoranthene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 205-99-2	
Benzo(g,h,i)perylene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 191-24-2	
Benzo(j)fluoranthene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 205-82-3	
Benzo(k)fluoranthene	NI	D mg/L		0.010	1	09/21/16 00:00	09/22/16 15:0	6 207-08-9	
Benzothiophene	NI	-		0.010	1	09/21/16 00:00	09/22/16 15:0	6 95-15-8	
Carbazole	N	-		0.010	1	09/21/16 00:00			
4-Chloro-3-methylphenol	NI	_		0.020	1	09/21/16 00:00			
2-Chlorophenol	NI	-		0.010	1	09/21/16 00:00	09/22/16 15:0	6 95-57-8	
Chrysene	NI	-		0.010	1	09/21/16 00:00	09/22/16 15:0	6 218-01-9	
Dibenz(a,h)anthracene	NI	-		0.010	1	09/21/16 00:00	09/22/16 15:0	6 53-70-3	
Dibenzofuran	NI	_		0.010	1	09/21/16 00:00			
2,4-Dichlorophenol	NI	_		0.010	1	09/21/16 00:00	09/22/16 15:0	6 120-83-2	
2,4-Dimethylphenol	N			0.010	1	09/21/16 00:00			
4,6-Dinitro-2-methylphenol	N	_		0.050	1	09/21/16 00:00	09/22/16 15:0	6 534-52-1	
2,4-Dinitrophenol	N	_		0.050	1	09/21/16 00:00	09/22/16 15:0	6 51-28-5	
2,4-Dinitrotoluene	N	•		0.010	1	09/21/16 00:00	09/22/16 15:0	6 121-14-2	
2,6-Dinitrotoluene	N	•		0.010	1	09/21/16 00:00			
Fluoranthene	N	-		0.010	1	09/21/16 00:00			
Fluorene	N	-		0.010	1	09/21/16 00:00			
Indeno(1,2,3-cd)pyrene	N	•		0.010	1	09/21/16 00:00			
1-Methylnaphthalene	N	•		0.010	1	09/21/16 00:00			
2-Methylnaphthalene	N	•		0.010	1	09/21/16 00:00			
2-Methylphenol(o-Cresol)	N	-		0.010	1	09/21/16 00:00			
3&4-Methylphenol(m&p Cresol)	N	-		0.010	1	09/21/16 00:00			
Naphthalene	N	_		0.010	1	09/21/16 00:00			
Pentachlorophenol	1.	•		0.50	50	09/21/16 00:00			
Phenanthrene	N	•		0.010	1	09/21/16 00:00			
Phenol	N	-		0.010	1	09/21/16 00:00			
Pyrene	N	•		0.010	1	09/21/16 00:00			
2,3,4,6-Tetrachlorophenol	N	•		0.020	1	09/21/16 00:00			
2,4,5-Trichlorophenol	N	-		0.010	1	09/21/16 00:00			
2,4,6-Trichlorophenol	N	•		0.010	1	09/21/16 00:00			
Surrogates		g/ L		2.2.3	•				
Nitrobenzene-d5 (S)	6	32 %		26-105	1	09/21/16 00:00	09/22/16 15:0	6 4165-60-0	
2-Fluorobiphenyl (S)		66 %		24-123	1	09/21/16 00:00			
Terphenyl-d14 (S)		'3 %		43-123	1	09/21/16 00:00			
Phenol-d6 (S)		23 %		10-63	1	09/21/16 00:00			
2-Fluorophenol (S)		34 %		13-73	1	09/21/16 00:00			
2,4,6-Tribromophenol (S)		4 %		10-169	1	09/21/16 00:00			



Project:

GW Annual IP-Joplin

Pace Project No.:

Date: 09/27/2016 02:48 PM

60227912

Sample: J-08-28	Lab ID: 6022	27912013	Collected: 09/15/1	16 09:45	Received: 09	/16/16 09:10 N	// Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Meth	od: EPA 82	70 Preparation Met	hod: EP/	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	83-32-9	
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	208-96-8	
Anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	120-12-7	
Benzo(a)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	56-55-3	
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	50-32-8	
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	205-99-2	
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	205-82-3	
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	207-08-9	
Benzothiophene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:27	95-15-8	
Carbazole	ND	mg/L	0.010	1		09/22/16 15:27		
4-Chloro-3-methylphenol	ND .	mg/L	0.020	1		09/22/16 15:27		
2-Chlorophenol	ND	mg/L	0.010	1		09/22/16 15:27		
Chrysene	ND	mg/L	0.010	1		09/22/16 15:27		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1		09/22/16 15:27		
Dibenzofuran	ND	mg/L	0.010	1		09/22/16 15:27		
2,4-Dichlorophenol	ND	mg/L	0.010	1		09/22/16 15:27		
2,4-Dimethylphenol	ND	mg/L	0.010	1		09/22/16 15:27		
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1		09/22/16 15:27		
2,4-Dinitrophenol	ND	mg/L	0.050	1		09/22/16 15:27		
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 15:27		
2.6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 15:27		
Fluoranthene	ND	mg/L	0.010	1		09/22/16 15:27		
Fluorene	ND	mg/L	0.010	1		09/22/16 15:27		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 15:27		
1-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 15:27		
2-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 15:27		
2-Methylphenol(o-Cresol)	ND	mg/L	0.010	1		09/22/16 15:27		
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010	1		09/22/16 15:27	93-40-7	
Naphthalene	ND	mg/L	0.010	1	09/21/16 00:00		01_20_3	
Pentachlorophenol	1.2	mg/L	0.50	50		09/23/16 13:22		
Phenanthrene	ND	mg/L	0.010	1		09/22/16 15:27		
Phenol	ND	mg/L	0.010	1		09/22/16 15:27		
Pyrene	ND	mg/L	0.010	1		09/22/16 15:27		
2,3,4,6-Tetrachlorophenol	ND ND	mg/L	0.020	1		09/22/16 15:27		
2,4,5-Trichlorophenol	ND ND	mg/L	0.020	1		09/22/16 15:27		
2,4,6-Trichlorophenol	ND ND	mg/L	0.010	1		09/22/16 15:27		
Surrogates	140	g/L	0.010	•	33/21/10 00:00	00122110 10.21	00-00-Z	
Nitrobenzene-d5 (S)	77	%	26-105	1	09/21/16 00:00	09/22/16 15:27	4165-60-0	
2-Fluorobiphenyl (S)	80	%	24-123	1		09/22/16 15:27		
Terphenyl-d14 (S)	80	%	43-123	1	09/21/16 00:00			
Phenol-d6 (S)	26	%	10-63	1		09/22/16 15:27		
2-Fluorophenol (S)	39	%	13-73	1	09/21/16 00:00	09/22/16 15:27		
aa.apilonoi (a)	87	%	10-10	1	09/21/16 00:00		007-12- 7	



ANALYTICAL RESULTS

Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Date: 09/27/2016 02:48 PM

Sample: J-13-37	Lab ID: 602	27912014	Collected: 09/15/1	6 10:30	Received: 09	/16/16 09:10 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Metl	nod: EPA 82	270 Preparation Met	hod: EP/	A 3510			
Acenaphthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	83-32-9	
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	208-96-8	
Anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	120-12-7	
Benzo(a)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	56-55-3	
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	50-32-8	
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	205-99-2	
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	191-24-2	
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	205-82-3	
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	207-08-9	
Benzothiophene	0.011	mg/L	0.010	1		09/22/16 15:49		
Carbazole	ND	mg/L	0.010	1		09/22/16 15:49		
4-Chloro-3-methylphenol	ND	mg/L	0.020	1		09/22/16 15:49		
2-Chlorophenol	ND	mg/L	0.010	1		09/22/16 15:49		
Chrysene	ND	mg/L	0.010	1		09/22/16 15:49		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1		09/22/16 15:49		
Dibenzofuran	ND	mg/L	0.010	1		09/22/16 15:49		
2,4-Dichlorophenol	ND	mg/L	0.010	1		09/22/16 15:49		
2,4-Dimethylphenol	ND	mg/L	0.010	1		09/22/16 15:49		
4,6-Dinitro-2-methylphenol	ND	mg/L	0.051	1		09/22/16 15:49		
2,4-Dinitrophenol	ND	mg/L	0.051	1		09/22/16 15:49		
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 15:49		
2.6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 15:49		
Fluoranthene	ND	mg/L	0.010	1		09/22/16 15:49		
Fluorene	ND	mg/L	0.010	1		09/22/16 15:49		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 15:49		
1-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 15:49		
2-Methylnaphthalene	ND	mg/L	0.010	1		09/22/16 15:49		
• •	ND ND	•	0.010	1		09/22/16 15:49		
2-Methylphenol(o-Cresol)	ND ND	mg/L	0.010	1			90-40-7	
3&4-Methylphenol(m&p Cresol)		mg/L		1		09/22/16 15:49	04 00 3	
Naphthalene	ND	mg/L	0.010			09/22/16 15:49		
Pentachlorophenol	2.4	mg/L	1.0	100		09/23/16 14:05		
Phenanthrene	ND	mg/L	0.010	1		09/22/16 15:49		
Phenol	ND	mg/L	0.010	1		09/22/16 15:49		
Pyrene	ND	mg/L	0.010	1		09/22/16 15:49		
2,3,4,6-Tetrachlorophenol	0.14	mg/L	0.10	5		09/23/16 13:43		
2,4,5-Trichlorophenol	ND	mg/L	0.010	1		09/22/16 15:49		
2,4,6-Trichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 15:49	88-06-2	
Surrogates Nitrohenzene d5 (S)	59	%	26-105	1	00/21/16 00:00	09/22/16 15:49	4165 <u>-</u> 60-0	
Nitrobenzene-d5 (S)	63	% %	26-105 24-123	1		09/22/16 15:49		
2-Fluorobiphenyl (S)	70	% %		1		•		
Terphenyl-d14 (S)			43-123			09/22/16 15:49		
Phenol-d6 (S)	23	%	10-63	1		09/22/16 15:49		
2-Fluorophenol (S)	35	%	13-73	1		09/22/16 15:49		
2,4,6-Tribromophenol (S)	70	%	10-169	1	09/21/16 00:00	09/22/16 15:49	118-79-6	

REPORT OF LABORATORY ANALYSIS



ANALYTICAL RESULTS

Project:

GW Annual IP-Joplin

Pace Project No.: 60227912

Date: 09/27/2016 02:48 PM

Sample: J-23-43R	Lab ID: 602	27912015	Collected: 09/15/1	6 11:15	Received: 09	/16/16 09:10 N	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8270 MSSV Semivolatile Organic	Analytical Meti	nod: EPA 82	270 Preparation Met	hod: EP/	A 3510				
Acenaphthene	0.20	mg/L	0.050	5	09/21/16 00:00	09/22/16 16:10			
Acenaphthylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35			
Anthracene	0.022	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	120-12-7		
Benzo(a)anthracene	0.012	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	56-55-3		
Benzo(a)pyrene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	50-32-8		
Benzo(b)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	205-99-2		
Benzo(g,h,i)perylene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	191-24-2		
Benzo(j)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	205-82-3		
Benzo(k)fluoranthene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	207-08-9		
Benzothiophene	0.14	mg/L	0.050	5	09/21/16 00:00	09/22/16 16:10	95-15-8		
Carbazole	0.043	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	86-74-8		
4-Chloro-3-methylphenol	ND.	mg/L	0.020	1	09/21/16 00:00	09/22/16 12:35	59-50-7	e - Jess	
2-Chlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	95-57-8		
Chrysene	0.012	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	218-01-9		
Dibenz(a,h)anthracene	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	53-70-3		
Dibenzofuran	0.088	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	132-64-9		
2,4-Dichlorophenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	120-83-2		
2,4-Dimethylphenol	ND	mg/L	0.010	1	09/21/16 00:00	09/22/16 12:35	105-67-9		
4,6-Dinitro-2-methylphenol	ND	mg/L	0.050	1	09/21/16 00:00	09/22/16 12:35	534-52-1		
2,4-Dinitrophenol	ND	mg/L	0.050	1	09/21/16 00:00	09/22/16 12:35	51-28-5		
2,4-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 12:35			
2.6-Dinitrotoluene	ND	mg/L	0.010	1		09/22/16 12:35			
Fluoranthene	0.088	mg/L	0.010	1		09/22/16 12:35			
Fluorene	0.13	mg/L	0.050	5	09/21/16 00:00	09/22/16 16:10	86-73-7		
Indeno(1,2,3-cd)pyrene	ND	mg/L	0.010	1		09/22/16 12:35			
1-Methylnaphthalene	0.12	mg/L	0.050	5		09/22/16 16:10			
2-Methylnaphthalene	0.16	mg/L	0.050	5		09/22/16 16:10			
2-Methylphenoi(o-Cresol)	ND	mg/L	0.010	1		09/22/16 12:35			
3&4-Methylphenol(m&p Cresol)	ND	mg/L	0.010	1		09/22/16 12:35			
Naphthalene	1.9	mg/L	0.50	50		09/23/16 14:26			
Pentachlorophenol	1.1	mg/L	0.50	50		09/23/16 14:26			
Phenanthrene	0.22	mg/L	0.050	5		09/22/16 16:10			
Phenol	ND	mg/L	0.010	1		09/22/16 12:35			
	0.059	mg/L	0.010	1		09/22/16 12:35			
Pyrene 2,3,4,6-Tetrachlorophenol	0.053	mg/L	0.020	i		09/22/16 12:35			
•	0.033 ND	mg/L	0.010	1		09/22/16 12:35			
2,4,5-Trichlorophenol	ND	mg/L	0.010	1		09/22/16 12:35			
2,4,6-Trichlorophenol Surrogates	IND	my/L	0.010	•	03/2 1/ 10 00.00	00/22/10 12:00	00 00 E		
Nitrobenzene-d5 (S)	41	%	26-105	1	09/21/16 00:00	09/22/16 12:35	4165-60-0		
2-Fluorobiphenyl (S)	43	%	24-123	1		09/22/16 12:35			
	54	%	43-123	1		09/22/16 12:35			
Terphenyl-d14 (S) Phenol-d6 (S)	20	% %	10-63	1		09/22/16 12:35			
• •	30	% %	13-73	1		09/22/16 12:35			
2-Fluorophenol (S)	50 50	% %	10-169	1		09/22/16 12:35			
2,4,6-Tribromophenol (S)	อบ	%	10-169		08/21/10 00:00	09122110 12.33	110-78-0		

REPORT OF LABORATORY ANALYSIS



QUALITY CONTROL DATA

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

QC Batch:

447363

Analysis Method:

EPA 8270

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water MSSV

Associated Lab Samples:

60227912001, 60227912002, 60227912003, 60227912004, 60227912005, 60227912006, 60227912007, 60227912008, 60227912009, 60227912010, 60227912011, 60227912012, 60227912013, 60227912014,

60227912015

METHOD BLANK: 1829988

Matrix: Water

Associated Lab Samples:

 $60227912001, 60227912002, 60227912003, 60227912004, 60227912005, 60227912006, 60227912007, \\60227912008, 60227912009, 60227912010, 60227912011, 60227912012, 60227912013, 60227912014, \\$

60227912015

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/L	ND	0.010	09/22/16 09:01	
2,3,4,6-Tetrachlorophenol	mg/L	ND	0.020	09/22/16 09:01	
2,4,5-Trichlorophenol	mg/L	ND	0.010	09/22/16 09:01	
2,4,6-Trichlorophenol	mg/L	ND	0.010	09/22/16 09:01	
2,4-Dichlorophenol	mg/L	ND	0.010	09/22/16 09:01	
2,4-Dimethylphenol	mg/L	ND	0.010	09/22/16 09:01	
2,4-Dinitrophenol	mg/L	ND	0.050	09/22/16 09:01	
2,4-Dinitrotoluene	mg/L	ND	0.010	09/22/16 09:01	
2,6-Dinitrotoluene	mg/L	ND	0.010	09/22/16 09:01	
2-Chlorophenol	mg/L	ND	0.010	09/22/16 09:01	
2-Methylnaphthalene	mg/L	ND	0.010	09/22/16 09:01	
2-Methylphenol(o-Cresol)	mg/L	ND	0.010	09/22/16 09:01	
3&4-Methylphenol(m&p Cresol)	mg/L	ND	0.010	09/22/16 09:01	
4,6-Dinitro-2-methylphenol	mg/L	ND	0.050	09/22/16 09:01	
4-Chloro-3-methylphenol	mg/L	ND	0.020	09/22/16 09:01	
Acenaphthene	mg/L	ND	0.010	09/22/16 09:01	
Acenaphthylene	mg/L	ND	0.010	09/22/16 09:01	
Anthracene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(a)anthracene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(a)pyrene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(b)fluoranthene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(g,h,i)perylene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(j)fluoranthene	mg/L	ND	0.010	09/22/16 09:01	
Benzo(k)fluoranthene	mg/L	ND	0.010	09/22/16 09:01	
Benzothiophene	mg/L	ND	0.010	09/22/16 09:01	
Carbazole	mg/L	ND	0.010	09/22/16 09:01	
Chrysene	mg/L	ND	0.010	09/22/16 09:01	
Dibenz(a,h)anthracene	mg/L	ND	0.010	09/22/16 09:01	
Dibenzofuran	mg/L	ND	0.010	09/22/16 09:01	
Fluoranthene	mg/L	ND	0.010	09/22/16 09:01	
Fluorene	mg/L	ND	0.010	09/22/16 09:01	
Indeno(1,2,3-cd)pyrene	mg/L	ND	0.010	09/22/16 09:01	
Naphthalene	mg/L	ND	0.010	09/22/16 09:01	
Pentachlorophenol	mg/L	ND	0.010	09/22/16 09:01	
Phenanthrene	mg/L	ND	0.010	09/22/16 09:01	
Phenol	mg/L	ND	0.010	09/22/16 09:01	
Pyrene	mg/L	ND	0.010	09/22/16 09:01	
2,4,6-Tribromophenol (S)	%	82	10-169	09/22/16 09:01	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



QUALITY CONTROL DATA

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

METHOD BLANK: 1829988

Matrix: Water

Associated Lab Samples:

60227912001, 60227912002, 60227912003, 60227912004, 60227912005, 60227912006, 60227912007, 60227912008, 60227912009, 60227912010, 60227912011, 60227912012, 60227912013, 60227912014,

60227912005, 0

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2-Fluorobiphenyl (S)	%	70	24-123	09/22/16 09:01	
2-Fluorophenol (S)	%	38	13-73	09/22/16 09:01	
Nitrobenzene-d5 (S)	%	66	26-105	09/22/16 09:01	
Phenol-d6 (S)	%	23	10-63	09/22/16 09:01	
Terphenyl-d14 (S)	%	80	43-123	09/22/16 09:01	

LABORATORY CONTROL SAMPLE:	1829989					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
1-Methylnaphthalene	mg/L	.05	0.040	79	59-107	
2,3,4,6-Tetrachlorophenol	mg/L	.05	0.044	88	59-117	
2,4,5-Trichlorophenol	mg/L	.05	0.040	80	70-108	
2,4,6-Trichlorophenol	mg/L	.05	0.041	82	68-108	
2,4-Dichlorophenol	mg/L	.05	0.038	77	65-101	
2,4-Dimethylphenol	mg/L	.05	0.038	75	57-98	
2,4-Dinitrophenol	mg/L	.05	.047J	93	35-142	
2,4-Dinitrotoluene	mg/L	.05	0.043	87	70-116	
2,6-Dinitrotoluene	mg/L	.05	0.042	84	69-113	
2-Chlorophenol	mg/L	.05	0.037	74	60-96	
2-Methylnaphthalene	mg/L	.05	0.040	80	59-111	
2-Methylphenoi(o-Cresol)	mg/L	.05	0.032	64	51-89	
3&4-Methylphenol(m&p Cresol)	mg/L	.05	0.030	61	44-85	
4,6-Dinitro-2-methylphenol	mg/L	.05	.045J	90	40-151	
4-Chloro-3-methylphenol	mg/L	.05	0.039	78	66-103	
Acenaphthene	mg/L	.05	0.043	85	68-105	
Acenaphthylene	mg/L	.05	0.041	82	66-109	
Anthracene	mg/L	.05	0.043	86	70-111	
Benzo(a)anthracene	mg/L	.05	0.043	87	71-111	
Benzo(a)pyrene	mg/L	.05	0.042	83	70-111	
Benzo(b)fluoranthene	mg/L	.05	0.046	92	69-115	
Benzo(g,h,i)perylene	mg/L	.05	0.044	87	65-117	
Benzo(j)fluoranthene	mg/L	.05	0.060	121		
Benzo(k)fluoranthene	mg/L	.05	0.041	82	69-113	
Benzothiophene	mg/L	.05	0.039	78		
Carbazole	mg/L	.05	0.043	87	69-112	
Chrysene	mg/L	.05	0.044	88	71-111	
Dibenz(a,h)anthracene	mg/L	.05	0.044	88	68-114	
Dibenzofuran	mg/L	.05	0.041	83	69-106	
Fluoranthene	mg/L	.05	0.044	87	71-112	
luorene	mg/L	.05	0.042	84	69-107	
ndeno(1,2,3-cd)pyrene	mg/L	.05	0.043	86	67-114	
Naphthalene	mg/L	.05	0.038	77	65-101	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.



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QUALITY CONTROL DATA

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

ABORATORY CONTROL SAMPLE:	1829989	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Pentachlorophenol	mg/L	.05	0.053	106	58-126	
Phenanthrene	mg/L	.05	0.043	86	69-111	
henoi	mg/L	.05	0.016	33	15-57	
yrene	mg/L	.05	0.043	85	71-113	
4,6-Tribromophenol (S)	%			91	10-169	
luorobiphenyl (S)	%			85	24-123	
Fluorophenol (S)	%			45	13-73	
robenzene-d5 (S)	%			82	26-105	
nenol-d6 (S)	%			29	10-63	
rphenyl-d14 (S)	%			92	43-123	

MATRIX SPIKE & MATRIX SF	PIKE DUPLIC	ATE: 18299	90		1829991	_						
Parameter	Units	60227912001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzo(j)fluoranthene	mg/L	ND ND	.05	.05	0.056	0.053	112	105	55-93	6	12	M0
Benzothiophene	mg/L	ND	.05	.05	0.034	0.033	67	65	43-114	3	6	
2.4.6-Tribromophenol (S)	g %						77	71	10-169		42	
2-Fluorobiphenyl (S)	%						69	64	24-123			
2-Fluorophenol (S)	%						35	34	13-73		30	
Nitrobenzene-d5 (S)	%						62	59	26-105			
, ,	%						22	21	10-63		34	
Phenol-d6 (S) Terphenyl-d14 (S)	% %						77	72	43-123			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.





QUALIFIERS

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

Date: 09/27/2016 02:48 PM

MO

Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

GW Annual IP-Joplin

Pace Project No.:

60227912

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60227912001	J-11-119	EPA 3510	447363	EPA 8270	447519
60227912002	J-12-28	EPA 3510	447363	EPA 8270	447519
60227912003	J-14-30	EPA 3510	447363	EPA 8270	447519
60227912004	J-21-59	EPA 3510	447363	EPA 8270	447519
60227912005	J-25-40	EPA 3510	447363	EPA 8270	447519
60227912006	J-31-60R	EPA 3510	447363	EPA 8270	447519
60227912007	J-49-17	EPA 3510	447363	EPA 8270	447519
30227912008	J-52-17R	EPA 3510	447363	EPA 8270	447519
60227912009	J-55-22	EPA 3510	447363	EPA 8270	447519
60227912010	J-16-46	EPA 3510	447363	EPA 8270	447519
60227912011	EQUIP BLANK	EPA 3510	447363	EPA 8270	447519
60227912012	DUP 1	EPA 3510	447363	EPA 8270	447519
60227912013	J-08-28	EPA 3510	447363	EPA 8270	447519
60227912014	J-13-37	EPA 3510	447363	EPA 8270	447519
60227912015	J-23-43R	EPA 3510	447363	EPA 8270	447519



Sample Condition Upon Receipt

W0#:60227912

Client Name: <u>Farhon//Preno/It-1</u> , Paper)			
	PEX 🗆 ECI 🗆	Pace □ Xroads □	Client ☐ Other ☐
Tracking #: 704 665 2590, -2580, -2605 Pag	ce Shipping Label L	Used? Yes 🗫 No 🗆	
Custody Seal on Cooler/Box Present: Yes ♥ No □	Seals intact: Ye	es ∕a No □	
Packing Material: Bubble Wrap & Bubble Bags*	⊈ Foam	☐ None ☐ Oth	er 🗆
Thermometer Used: (T-266) T-239 Type or	fice: Web Blue	None	
Cooler Temperature (°C): As-read 2.1, 1.1, pACorr. Fact	tor CF+1.1 CF-0.1 Cor	rected <u>3.2, 2.3, 1</u> .5	Date and initials of person examining contents:
Temperature should be above freezing to 6°C			
Chain of Custody present:	MYes □No □	N/A	
Chain of Custody relinquished:	¶DYes □No □t	N/A	
Samples arrived within holding time:	ZÜYes □No □1	N/A	
Short Hold Time analyses (<72hr):	□Yes ŞANo □I	N/A	
Rush Turn Around Time requested:	□Yes ENo □	N/A	
Sufficient volume:	52-Yes □No □1	N/A	
Correct containers used:	Pres ONo Or	N/A	
Pace containers used:	ØYes □No □N	N/A	
Containers intact:	ØYes □No □N	N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No 🧀	N/A	
Filtered volume received for dissolved tests?	□Yes □No □	N/A	
Sample labels match COC: Date / time / ID / analyses	ZaYes □No □n	N/A	
Samples contain multiple phases? Matrix:	□Yes □No 🛂	N/A	
Containers requiring pH preservation in compliance?	□Yes □No Æ	N/A	
(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks: 500/A		······································	
Lead acetate strip turns dark? (Record only)	□Yes □No		***************************************
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:	□Yes □No 72N	v/a	
Headspace in VOA vials (>6mm):	□Yes □No 🗚	N/A	
Samples from USDA Regulated Area: State:	□Yes □No ₽M	N/A	
Additional labels attached to 5035A / TX1005 vials in the field	? □Yes □No ÆN	N/A	
Client Notification/ Resolution: Copy COC to	o Client? Y / N	Field Data Required?	Y / N
Person Contacted: Date/1	Time:		
Comments/ Resolution:			
A A.		4	
Project Manager Review:		Date: 9-16-16	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Required	A Client information:	Section B Required Pro							Section	Infor												Pag	je:	1	of	•	2	
Company	EarthCon Site Services Inc	Report To: S		-					Attenti			епті Н	arve	<u> </u>				4							rittener i			
Address.	1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: Lo	orenzo	Pittsley (I	lorenzowp	3@yahoo	o.com)		Compa	ny Na	me:				*************			_	REGI	JLATO								4
	Marietta GA 30062	A	ison Le	vinson (a	alevinson	@earthco	n.com)		Addres	is:								╝	□ NPDES □ GROUND WATER □ DRINKING WATER									
Email To:	sharvey@earthcon.com	Purchase Ord	er No.:			and a			Pace Q Referen										<u> </u>	JST	Γ.	RCRA COTHER						
Phone	770-973-2100 Fax 770-973-7395	Project Name	GW	Annual II	P-Joplin				Pace P Manage	roject	Tro	ıdy G	ipsor	913	-563	-140	5		Site	Locatio	n							M
Request	ed Due Date/TAT:	Project Numb	er. Inte	mational I	Paper - Jo	oplin, MO			Pace P		21	28 Li	ne 9							STATE		Misso	ouri .					M
	ed Due Date/TAT: Standard	<u> </u>							L					,	Į. 3	R	equeste	ed /	Inaly	sis Filte	red (Y/N)	VII					
						·		Г							T,					TT	ПП							
	Section D Valid Matrix C Required Client Information MATRIX	CODE	codes to left)		COLLE	ECTED					Pre	serva	tives	······································	Įξ			_			1-1							224
r.	DRINKING WATER WATER	DW WT	C=COMP)					<u>Z</u> <u>O</u>								1												
	WASTE WATER PRODUCT	WW P		COMPO		COMPOS END/GR	ate Ab	COLLECTION															Residual Chlorine (Y/N)					
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT, All relevant fields must be completed accurately,

Section A Required Client Information:	Section B Required Project In	formation:		Section C	nation;			Page:	2	or 2
Company: EarthCon Site Services Inc	Report To: Sherri	Harvey		Attention;	Sherri Harvey		1	<u> </u>		
Address: 1880 W Oak Pkwy Bldg 100	Ste 106 Copy To: Lorenz	o Pittsley (lorenzow	p3@yahoo.com)	Company Nan	ne;		REGULATOR	AGENCY		
Marietta GA 30062	Alison	Levinson (alevinsor	@earthcon.com)	Address	······································		T NPDES	GROUND	WATER	DRINKING WATER
Email To: sharvey@earthcon.com	Purchase Order No.			Pace Quote Reference:	###./			RCRA	i i	OTHER
Phone: 770-973-2100 Fax: 770-973	-7395 Project Name: G	W Annual IP-Joplin		Pace Project Manager	Trudy Gipson 913-	563-1405	Site Location	5.55	W/////	
Requested Due Date/TAT:	Project Number: In	ternational Paper - J	oplin, MO		2128 Line 9		STATE:	Missouri	_ /////	
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Required Client Information	alid Matrix Codes	COLL	ECTED		Preservatives					
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Page 2	<u> </u>	SAMPLE	ER NAME AND SIGNATI	 RE					0 8	ec:
28 of 28			PRINT Name of SAMPLES	-	OL Da	DATE Signed (MM/DD/YY):	9 19-	16	Temp in *C Received on Ice (Y/N)	Custody Sealed Cooler (Y/N) Samples Inlect (Y/N)



Environmental Challenges BUSINESS SOLUTIONS®

EarthCon Consultants, Inc. 1880 West Oak Parkway Building 100, Suite 106 Marietta. Georgia 30062

> P: 770-973-2100 F: 770-973-7395 www.earthcon.com

Memorandum

DATE:

December 16, 2016

To:

Alison Levinson, EarthCon Consultants

From:

Kathy J. Gunderson, Senior Scientist

Subject:

Quality Assurance Review

Project:

International Paper Joplin, Missouri Facility

Sampling Dates:

September 14 and 15, 2016

Project Number:

02.20000003.16

SDG Numbers:

60227912

1.0 Introduction

This memorandum presents the cursory validation of the water sample analyses listed in Table 1. The analyses were performed by Pace Analytical Services, Inc. in Lenexa, Kansas. The criteria used to qualify data are from the *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 2008), the analytical methods, or the professional judgment of the validation chemist. The following laboratory deliverables were reviewed during the validation process:

- Chain-of-custody (COC) documentation to assess holding times and verify report completeness
- Laboratory quality control (QC) sample results, including method blanks, surrogate spikes, laboratory control samples (LCS), and matrix spike/matrix spike duplicates (MS/MSD)
- Analytical results to verify reporting limits
- Field QC samples to evaluate field blank cleanliness and field duplicate precision

In addition, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness are evaluated.

Table 1—Sample Data Reviewed

Sample ID	Laboratory ID	SVOAª
J-11-119	60227912001	X
J-12-28	60227912002	X
J-14-30	60227912003	X
J-21-59	60227912004	
J-25-40	60227912005	X
J-31-60R	60227912006	X
J-49-17	60227912007	X
J-52-17R	60227912007	X
J-55-22	60227912009	X
J-16-46	60227912009	X
Equip Blank	60227912010	X
Dup 1		X
J-08-28	60227912012	X
J-13-37	60227912013	X
J-23-43R	60227912014	X
U-20-40N	60227912015	X

^a Semivolatile organic analysis by Method 3510/8270C (USEPA 1996)

2.0 Data Validation

2.1 Custody, Preservation, and Completeness

Sample custody was maintained from sample collection to receipt at the laboratory. The report is complete and contains results for the samples and tests requested on the COC forms. The samples were received intact with no signs of tampering and were properly preserved.

The sampling team relinquish signature is missing from the COC forms.
 The sampling personnel did sign as "sampler". It is assumed sample custody was maintained because the intact custody seals were present on the coolers when received at the laboratory.

2.2 Semivolatile Organics Analyses by Method 8270C

2.2.1 Holding Times

The samples were extracted within the required holding time of 7 days and analyzed within the required holding time of 40 days.

2.2.2 Blank Analyses

2.2.2.1 Method Blanks

Method blanks were analyzed at the required frequency, and target analytes were not detected above the reporting limits.

2.2.2.2 Equipment Blanks

Target analytes were not detected above the reporting limits in the equipment rinsate blank sample.

2.2.3 Surrogate Analyses

Surrogate compounds were added to the samples, blanks, and QC samples as required. The recovery values are within the laboratory QC limits.

2.2.4 Matrix Spike/Matrix Spike Duplicate Analyses

One MS/MSD pair was analyzed at the required frequency using sample J-11-119. The recovery and relative percent difference (RPD) values are within the laboratory QC limits with the following exceptions.

- Due to a laboratory omission, only two analytes were spiked into the MS/MSD. Data qualifiers are not required due to a lack of matrix QC results.
- The MS and MSD recovery values of benzo(j)fluoranthene are above the laboratory QC limits of 55 to 93 percent at 105 and 112 percent. Data qualification is not required because the bias is high and benzo(j)fluoranthene was not detected in sample J-11-119.

2.2.5 Laboratory Control Sample

LCS samples were analyzed at the required frequency of one per extraction batch. The recovery values are within the laboratory QC limits.

 Laboratory control limits were not listed for benzo(j)fluoranthene and benzothiophene. Pace was contacted: due to the infrequent analysis of these compounds statistical control limits have not been calculated. The LCS recovery values for these analytes are reasonable (121 percent for benzo(j)fluoranthene and 78 percent for benzothiophene).

2.2.6 Laboratory Reporting Limits

The project specific analyte list was reported. The reporting limits are consistent with method reporting limits, except when the samples require diluted analysis.

2.2.7 Field Duplicates

One field duplicate pair was collected and analyzed for semivolatile organic compounds (SVOCs). RPD values are within the 30 percent QC limit as shown below.

Sample ID	Duplicate ID	Analyte	Sample Value ^a	Duplicate Value ^a	RPD ^b
J-08-28	DUP-1	Pentachlorophenol	1.2	1.0	18

^a Results are reported in mg/L

^b Relative percent difference

2.2.8 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Upon consideration of the information presented here, the data are acceptable for their intended use.

3.0 Assessment of Data Quality Objectives

3.1 Precision

Precision is a measure of the agreement among individual measurements of the same property, under prescribed similar conditions. Precision is determined through analysis of MS/MSDs, sample duplicates, and field duplicate samples. Duplicate samples are evaluated for precision in terms of relative percent difference. Relative percent difference is defined as the difference between the duplicate results divided by the mean and expressed as a percent.

The precision of the semivolatile organic data is acceptable. The RPD values for the field duplicate and MS/MSD are within the criteria.

3.2 Accuracy

Accuracy is the degree of agreement between a measurement and the accepted reference or true value. The level of accuracy is determined by examination of surrogates, MS/MSDs, LCSs, method blanks, and field blanks. The surrogate, matrix spike, and laboratory control sample recovery values were compared to the laboratory QC limits. Method and field blanks are analyzed to identify compounds that could be introduced during the sampling, laboratory extraction, or analysis phase (i.e., laboratory contaminants) and lead to inaccurate results.

The accuracy of the semivolatile data is acceptable. The LCS and surrogate recovery values are within the laboratory QC limits. The MS/MSD recovery values are acceptable except for benzo(j)fluoranthene. Data accuracy is not affected because the bias is high and benzo(j)fluoranthene was not detected in the spiked sample.

3.3 Representativeness

Representativeness is the extent to which the data reflect the actual contaminant levels present in the samples. Representativeness is assessed through method and field blanks, and proper preservation and handling. Method and field blank analyses allow for the detection of artifacts that may be reported as false positive results. Proper sample preservation and handling ensure that sample results reflect the actual sample concentrations.

The data are assumed to be representative because the samples were extracted and analyzed within the required holding times and the samples were properly preserved and handled. Target analytes were not detected in the method or field blanks.

3.4 Comparability

Comparability is a measure of how easily the data set can be compared and combined with other data sets. The data are assumed to be comparable since standard EPA methods were used to analyze the samples, the method QC criteria were generally met, and routine detection limits were reported.

3.5 Completeness

Completeness is expressed as the ratio of valid results to the amount of data expected to be obtained under normal conditions. Completeness is determined by assessing the number of samples for which valid results were obtained versus the number of samples that were submitted to the laboratory for analysis. Valid results are results that are determined to be usable during the data validation review process.

The completeness of the SVOC data collected in September 2016 is 100 percent.

4.0 Data Qualifier Definitions

The following data validation qualifiers were used in the review of this data set. These qualifiers are from the *Contract Laboratory Program National Functional Guidelines for Organic Data Review*.

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

5.0 References

USEPA. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Updates I, II, IIA, IIB, and III. United States Environmental Protection Agency. Office of Solid Waste. December 1996.

Quality Assurance Review International Paper Joplin, Missouri Facility December 16, 2016 Page 6 of 6

USEPA. 2008. Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency Office of Emergency and Remedial Response. EPA540-R-08-01. June 2008.

6.0 SUMMARY OF QUALIFIED DATA

Data qualification is not required based on the data quality review of this data set.

Appendix H
NAPL Recovery Forms

Well No.	2	3	4	3	R	

			WELL	DATA		•	EXTRACT	ION DATA	REMARKS
		Depth to Water (ft)	LN	APL	DN	APL .	LNAPL Total	DNAPL Total	•
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	4
Date 1/13/16	1340	5:95		0,75	1			,	TOTAL BAILED
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. 23-43-R

			WELL	DATA		•			<u>, , , , , , , , , , , , , , , , , , , </u>
							LNAPL	ION DATA DNAPL	REMARKS
Date	Time	vvater (ff)	LN Depth (ft)	APL Thickness (ff)	Depth (ft)	APL	Total	Total	
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No.	J-	23.4	3/2

			WELL	DATA			EXTRACT	ION DATA		REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)		
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. 23-43-R

			WELL	DATA	EXTRACT	ION DATA	REI	MARKS		
Date	Time	Depth to Water (ft)		APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)		
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. 23-43-R

			WELL	DATA	EXTRACT	ION DATA	REMARKS		
Date	Time		LN Depth (ft)	APL Thickness (ft)	Depth (ft)	APL Thickness (ft)	LNAPL Total	DNAPL Total	
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid NM - Not measurable ND - Not detected 3

Well No. 23 43 R

			WELL	DATA _			EXTRACT	ION DATA	REMARKS
		Depth to	LN	APL	DN	APL	LNAPL Total	DNAPL Total	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. 2343 R

			WELL	DATA	EXTRACT LNAPL	ION DATA DNAPL	REMARKS		
		Depth to Water (ft)	LN	APL Thickness (ft)	DN DN	APL Thislesses (#\)	Total	Total Volume (gal)	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gai)	Volume (gai)	4 TAI Railed
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1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. 23-43-17

			WELL	DATA		•	EXTRACT	ION DATA	REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)	
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Well No. 23-43-R

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	•	Depth to	LN	APL	DN	APL	Total	Total	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gai)	Volume (gal)	
9/5/16	11:45	12,60	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			0		0	Bailed 7.5
112110	11-11	12100					 		CALLOW DEWATER
									GALIONS OF TELL
	ĺ				ļ	1			Black speck
									BAILER 7.5 GALLONS OF WATER BLACK SPECK Sheen ON VVATER
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable

ND - Not detected

Well No. J-23.43/2

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Б.		Depth to Water (ft)	1 &	APL	DN	APL	LNAPL Total	DNAPL Total	· ·
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
Date 10/24/16	1175	8.75			ļ	1			BLACK Specks
					,				IN WATER BAILE
					•		·		Black specks IN WATER BAILED TOTAL WATER BAILED 8 91
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No.	J-2	-3	 43	2	

			WELL I	DATA			EXTRACT	ION DATA	REMARKS
Date	Time	Depth to Water (ft)	LN/ Depth (ft)		DN. Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)	
11/23/16	1241	7.513	2001. (1.)	0		0			Bailed 9, 75 Gl WATER AND TRACE NAPL
11/2/10	12,10	7							WATER AND TRACE
							· ·		NAPL
 									
									
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. 23-43-R

			WELL	DATA		•	EXTRACT	ION DATA	REMARKS	
Data	5 7	Depth to Water (ft)	LN	APL	DN	APL .	LNAPL Total	DNAPL Total		
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)			
2/12/16	13,20	9.71				!	0.0	0,0	BAILED 8.5 GL	
									WATER AND TRACE	
									BAILED 8.5 GI WATER AND TRACE NAPL	
			·				<u></u>		110APE	
				 						
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. MR-4/LSR-8R/LSP-3

			WELL	DATA		•	EVTDAGT		
		Depth to		APL	r) NI	APL .	LNAPL X	ION DATA DVAPI	REMARKS
.Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	i qiai Volume (gal)	
1/1/16	13:40		······································				1	10-7	NAPL
114116	07.45						1		
16116	0930						/		
118119	14:45						,		
111116	08:30								
113/16	10 40								
115/16	16 70		********					·····	
118/16	0 215		(',		
120116	8:30					***************************************	 		
122/16			······································						
125/16	0:8:35								{
127/16	11:45						 		
129/16	16:15	_,							
/ == 1/1 ==	75.75				-				
									
					 				
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected * skimmed off surface of oil/water sep.

Well No. MR-4/LSR-8R/LSP-3

Date	Time	Depth to						ION DATA	REMARKS
1 /	111116	Water (ft)	LN. Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL *	DNAA Total Volume (gal)	
	0830	water (II)	Dehru (ir)	mickness (it)	Deptir (it)	mickness (ii)	volume (gai)	volume (gai)	NAPL
	1030						i		77.72
	1340						,		
2/8/16	0810						—		
2/10/16	11:20								
	14:15						 		
2/15/16	0905						 	-	
2/17/16	11:10			-			1	<u> </u>	
2/19/16									
122/16	0755				·		 	<u> </u>	
2 2416	1025						 		
2/26/16							-		
2 24/16	06.40								
7 410	<i>V V V</i>								
									
									
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected * Skimmed off Surface of oil /water sep.

Well No. 2503/2512-812/1412-4

			WELL	DATA			EXTRACT	ION DATA DNAPL Total	REMARKS
Date	Time	Depth to Water (ft)		APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	Total Volume (gal)	Total Volume (gal)	,
362116	111110	Water (II)	Deptit (it)	THICKINGS (II)	Dopail (iii)	711101111000 (11)	1	(34)	NAPL
2/4/16	0610						1		
3/2/16	0 230						1		
319116	0 4.60						,		
3/0/16	e d st						,		
3/14/16							1		
3/16/16	0920						1		
351816	1010		····				1		
3/24/6							1		
3,2346	09:65		-m. var				1		
1/2/5/16	B 9/60						, ,		
2/2 A/16	ORAG						,		-
2/3/4/66	0805						—		
210410	1770							•	- Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna - Anna
				 					
				 					
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NM - Not measurable ND - Not detected * skinned off surface of oil/water sep.

Well No. LSP3 LSR8R

		· · · · · · · · · · · · · · · · · · ·	WELL	DATA		•	EXTRACT	ION DATA	REMARKS
		Depth to	LN	APL	DN	APL .	LNAPL *	DNAPL Total	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
4/1/16					L	l			NAOI
4)4/10		1							7
416/16									NAPL Sytem down
418/16									7 Sytem down
411/16					 				
		 							7
t112/16							0		
4/15/16							0		
4/18/16							1		
1 120/16							0		
12/16									
125/16	**		· ···				0		
127116									
							0		
1/29/16									
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected

* skimmed off top of oil/water sep.

Well No. LSR-8R - LSP-3, MRY

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Pat ę	Time	Depth to Water (ft)	LN Depth (ft)		DN Depth (ft)	IAPL Thickness (ft)	LNAPL *	DNAPL Total Volume (gal)	
5/2/16		1				1	Voidino (gai)	Volume (gai)	11001 600 -1-10
5/4/1/2									Settling to bottom of old sep.
			 		ļ	[-		Settling to bottom
5/0/16		 		ļ		· · · · · · · · · · · · · · · · · · ·			of olusep.
5/9//6							: 1		
5/11/16							_		
5/3/16							_		
5/16/16							,		
3/18/16									
5/10/1/4									
123/16						 			
212 1111		 		<u> </u>					
10.01.4									
7/27/16							- [
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected * skimmed off top of oil/water sep.

Well No. MR 4 LSP3 LSR 8R

			WELL	DATA			EXTRACT	ION DATA	<u>:</u>	REMARKS
		Depth to	LN	APL	- DN	APL	LNAPL *	DNAPL Total	:	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)		
6/8/16	1030			1]	1	3	<u></u>	VAPL
6/10/16	19:45						7			
6/13/16	10:50							, 525		
6115/16							***			
6/20/16 6/20/16 6/24/16 6/24/16	950						1	_	:	,
6/20/16										
6/22/16										
6/2416	1030						1			
6128/16										
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected * skimmed off top of oil/water sep.

MR4 LSP3 LSR8

· · · · · · · · · · · · · · · · · · ·			WELL	DATA	EXTRACT	DNAPL	REMARKS		
		D4b to	1 N	APL	DN	APL	LNAPL *	Total	
Date	Time	Depth to _ Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
116	1500					\$ 15 m	O		•
14/16	0 7;30						1		VACUUMED OFF
16/16	09:10						0		VACUUMED OFF WATER AND NAPL
18/16	13:30						1		•
	08:00						.5	_	
	12,20						1		
11/10	14,00						1		
16/16							2		
118/16	07.15								
	10:35						1,5		
122/16	16:10								
125/16	0.7:35			 		 	,5 1.5 .5	-	
127/16	11,00			 				<u> </u>	
<u> 129116</u>	13:45			<u> </u>	<u></u>				
						 			
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable ND - Not detected * skimmed off top of oil/watersep.

Well No. MR4, LSP3, LSR9

•			·	WELL	DATA		•	EXTRACT	ION DATA	REMARKS
٠.	Doto		Depth to	LN	APL	DN	IAPL .	LNAPL Total	DNAPL Total	REMARKS
جسر ہ	Date #1/16	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
									4291	NAPL
	8316							-	2591	
•	8/4/16									3
	8/8/16								3091	
•	9/10/16								0	
	8/12/16					<u> </u>		V	0	
	8/15/16									
	8112/16								0	
	8/19/16								0	<u> </u>
	8/22/16							· · · · · · · · · · · · · · · · · · ·	0	
	8/24/16								0	
	8/26/16								0	
Ì	8/29/16								0	
ŀ	8/31/16								0	
- 1	0/2/116								0	·
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- }-								-		of oil/water sep.
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. MR-4/LSR-8R/LSP-3

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	· · · · · · · · · · · · · · · · · · ·	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total	
9216		I	oopa. (ii)	Thiolaides (it)	Dopar (ii)	THIOLENGES (11)	0	0	Water + NAPL
9516		1					0	0	Wattor White
9711							: 0	0	
9716	·	1					0	0	
9 12 16							0	0	
9 1416		 			<u> </u>		0	0	
9 15 16		 			-		0	v	
9 19 16	···	 			<u> </u>	-	0	0	
921/6	·						0	0	
9 23 16	·						0		
9 26 16		 					8	0	
9 2011		 					ł		
9 28/6							5	0	·
9 30 16		 					.:		
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. MR-4/LSR-8R/LSP-3

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN. Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)	
103/16	111110	VValer (II)	Depui (ii)	Thickness (it)	Depar (ii)	Triicki less (it)	Volume (gar)	O C	none recovered
N5/16					<u> </u>			0	JOHE RECOVER FA
0/7616								0	
7 7 7	······································	 		<u> </u>				0	
016016				<u> </u>					
0/12/16								0	
0/14/16								0	
0117116									
0119/16		ļ						0	
0121/16								0	
024/16								0	
026/16								0	
OL 8/16								0	
0/31/16									
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. MR 4 LSP3 LSR 87

			WELL	DATA		•		EXTRACT	TON DATA		REMARKS
Date	Time	Depth to Water (ft)	•	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	v	LNAPL Total	DNAPL Total Volume (gal)	· ·	
11 30/16	16:00						Γ	NONE	NONE] [
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. <u>LSP3</u> /LSR-82/MR-4

			WELL	DATA			EXTRACT	ION DATA	F	REMARKS
Data	Ti	Depth to Water (ft)	LN.	APL This space (#1)	Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)		,
Date 1.4	Time	water (π)	Depth (ft)	Thickness (ft)	Depth (II)	Thickness (ii)	Volume (gai)	Voidine (gai)	Mar N/A	Parasiari
12/30/16	16:00						1		NONE	Recoverd
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. <u>Sump 23</u>

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Data	Time	Depth to		APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total Volume (gal)	
Date 1/15/16	7/10	9 13	Deptil (it)	. 9 5	2002(.9	T	Í		TOTAL PUMPED WATER + NAPL 750GI
116 3116	16,60	1.67							WATERTNAPL
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable

ND - Not detected

Well No. Sump	23
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			WELL	DATA			EXTRACT	TION DATA	REMARKS
Date	Time 10 4 0	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total	HEMAINS
1/3/11	10,40	6.64		0.65			:		TATAL PUMBED COO
	 	 							TOTAL PUMPED 600 WATER + NAPL
	ļ	-							VAILIFINADO
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No.	Sump	23	

			WELL	DATA	<u> </u>		EXTRACT LNAPL	ION DATA DNAPL	REMARKS
_		Depth to Water (ft)	LN	IAPL	DN	APL	Total	Total	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
3416/16	1010	5,75		695			, ,	(3/	T. TALL Privato and
		1							161AV IVAIPER
		 							WATERTNAPL
									TOTAV PUMPED WATER + NAPL 800 GI
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No.	Sump	23	
## Cii 140.			

			WELL	DATA			EXTRACT	ION DATA	REMARKS
Date	Time	Depth to _ Water (ft)		APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL. Total Volume (gal)	
4116	11110	Viator (ity					,		PUNID DOWN
7110							 		PUMP DOWN NOT PUMPED
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No.	Sump	<i>2</i> 3

			WELL	DATA		EXTRACT	ION DATA	REMARKS	
	_	Depth to	LN	APL	DN	APL	LNAPL Total	DNAPL Total	
Date	Time	Water (ft)	Depth (ft)	Thickness (ft)	Depth (ft)	Thickness (ft)	Volume (gal)		
5/16								00	PUMP DOWN
									Too yet To GOT
									PUMP DOWN Too wet To GET Truck IN To Pull Pump
									Pull P. M.
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

NM - Not measurable .

ND - Not detected

Well No. 5 UMP 29

		·	WELL	DATA			EXTRACTION DATA		REMARKS		
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total	DNAPL Total Volume (gal)			
2/30/16	09:10	11.15		1.19			J		PUN	roed	NADL
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. Sump 23

			WELL	DATA		•	EXTRACT	ION DATA	RE	WARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	Depth (ft)	APL Thickness (ft)	LNAPL Total· Volume (gal)	DNAPL Total Volume (gal)		
Date 7/2/16	1100	8,81		0.83					WATER	AND NAPL
									PUNIDED	AND NAPL
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No. SUMP 23

	·			DATA			•	EXTRAC	TION DATA	
Date	Time	Depth to Water (ft)	L	IAPL		DN	IAPL .	LNAPL	DNAPL Total	REMARKS
0/16/11	09:45	14.61	Depth (ft)	Thickness (ft)	Ξ, Ξ	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	
25.10110	07/75	17.01		4	IJL		1,35	1#-	1	RILDI WITCH
					\prod				-	NAPL WATER AND NAPL PUMPED 600GL
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No. Sump x	23
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			WELL	DATA			EXTRACT	ION DATA	REM	ARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gal)	DNAPL Total		
8/8/16	12,25	13.5				0.95	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		PUNIPED WATER TA	600 Gls
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No.	Sump	23	

			WELL	DATA			EXTRACT	ION DATA		REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total	DNAPL Total Volume (gal)		
10/28/16	1135	11.81				0.87			TOTAL	WATER AND
	<u></u>	<u> </u>							NAPL	600gl
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		<u> </u>					, .			
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1 GALLON = 3.78 LITERS 1 LITER = 0.2642 GALLONS NAPL - Nonaqueous-phase liquid

Well No.	Sump	23	
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		· · · · · · · · · · · · · · · · · · ·	WELL	DATA	EXTRACT	ION DATA	REMARKS		
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN	IAPL	LNAPL Total	DNAPL Total	
12316		8.75	Deptil (it)	THICKNESS (II)	Depth (ft)	Thickness (ft)	Volume (gal)	Volume (gal)	1501
1 2216	1220	10:17			·	087			65 Ogl WATER AND
		<u> </u>							650 gl WATER AND NAPL
						 	 		
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Well No.	Sump	23	

	WELL DATA							ION DATA	REMARKS
Date	Time	Depth to Water (ft)	LN Depth (ft)	APL Thickness (ft)	DN Depth (ft)	APL Thickness (ft)	LNAPL Total Volume (gai)	DNAPL Total Volume (gal)	
Date 2/22/16	10:30	12.71		1	305(1.)	0.83	voidino (gai)	Voiamo (gai)	PUMPED BOGI
						0.52			PUMPED 600GI WATER + NAPL
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1 GALLON = 3.78 LITERS
1 LITER = 0.2642 GALLONS
NAPL - Nonaqueous-phase liquid

Appendix I

Stormwater Sampling Records, Precipitation Daily Logs, Stormwater Laboratory Reports for January through August 2016, and Data Validation





April 04, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60214598

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on March 10, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60214598

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60214598

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60214598001	OUTFALL 001	Water	03/09/16 10:46	03/10/16 09:40
60214598002	OUTFALL 002	Water	03/09/16 11:45	03/10/16 09:40



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.:

60214598

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60214598001	OUTFALL 001	EPA 6010	ZBM	1	PASI-K
		EPA 6010 JGP 1	1	PASI-K	
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	JMT, NAW		PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	CRS	1	PASI-K
		EPA 420.1	OL	1	PASI-K
60214598002	OUTFALL 002	EPA 6010	ZBM	1	PASI-K
		EPA 6010	JGP	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	JMT, NAW	3	PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	CRS	1	PASI-K
		EPA 420.1	OL	1	PASI-K



Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

EPA 6010

Client:

Description: 6010 MET ICP EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method: E

EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

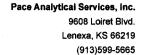
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

EPA 625 Description: 625 MSSV

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WET/60866

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60215320001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MS (Lab ID: 1732169)

· Oil and Grease

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

SM 2540F

Description: 2540F Total Settleable Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60214598

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

April 04, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60214598

Date: 04/04/2016 12:40 PM

Sample: OUTFALL 001	Lab ID:	Collected	Collected: 03/09/16 10:46			Received: 03/10/16 09:40 Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA	6010 Prepara	ation Meth	od: EPA	3010			
Zinc, Total Recoverable	0.065	mg/L	0.050	0.0071	1	03/16/16 13:00	03/17/16 11:20	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA	6010 Prepara	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.021J	mg/L	0.050	0.0071	1	03/21/16 13:30	03/22/16 13:20	7440-66-6	
625 MSSV	Analytical	Method: EPA	625 Preparat	tion Metho	d: EPA 6	625			
Acenaphthene	ND	ug/L	10.3	2.6	1	03/15/16 00:00	03/17/16 16:27	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.3	2.6	1	03/15/16 00:00	03/17/16 16:27	193-39-5	
Pentachlorophenol	ND	ug/L	10.3	2.6	1	03/15/16 00:00	03/17/16 16:27	87-86-5	
Phenanthrene	ND	ug/L	10.3	2.6	1	03/15/16 00:00	03/17/16 16:27	85-01-8	
Pyrene	ND	ug/L	10.3	2.6	1	03/15/16 00:00	03/17/16 16:27	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	89	%	33-120		1	03/15/16 00:00	03/17/16 16:27	4165-60-0	
2-Fluorobiphenyl (S)	83	%	39-120		1	03/15/16 00:00			
Terphenyl-d14 (S)	100	%	45-120		1		03/17/16 16:27		
Phenol-d6 (S)	34	%	11-120		1	03/15/16 00:00	03/17/16 16:27	13127-88-3	
2-Fluorophenol (S)	49	%	17-120		1	03/15/16 00:00	03/17/16 16:27	367-12 -4	
2,4,6-Tribromophenol (S)	103	%	39-120		1	03/15/16 00:00	03/17/16 16:27	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA	8270 by SIM	Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.042	1	03/15/16 00:00	03/16/16 19:38	53-70-3	
2-Fluorobiphenyl (S)	83	%	21-117		1	03/15/16 00:00	03/17/16 16:27	321-60-8	
Terphenyl-d14 (S)	100	%	21-131		1	03/15/16 00:00	03/17/16 16:27	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA	1664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		03/29/16 08:14		
2540F Total Settleable Solids	Analytical	Method: SM 2	2540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		03/10/16 14:00		
Phenolics, Total Recoverable	Analytical	Method: EPA	420.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.020	1		03/25/16 14:57		



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60214598

Sample: OUTFALL 002	Lab ID:	60214598002	Collected	1: 03/09/16	3 11:45	Received: 03/	3/10/16 09:40 Matrix: Water		
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA 6	010 Prepa	ration Meth	od: EPA	3010			
Zinc, Total Recoverable	0.083	mg/L	0.050	0.0071	1	03/11/16 11:10	03/14/16 18:23	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepa	ration Meth	od: EPA	3010			
Zinc, Dissolved	0.063	mg/L	0.050	0.0071	1	03/21/16 13:30	03/22/16 13:31	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	325 Prepara	ation Metho	d: EPA	625			
Acenaphthene	ND	ug/L	10.2	2.6	1	03/15/16 00:00			
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.2	2.6	1	03/15/16 00:00			
Pentachlorophenol	ND	ug/L	10.2	2.6	1		03/17/16 16:48		
Phenanthrene	ND	ug/L	10.2	2.6	1		03/17/16 16:48		
Pyrene	ND	ug/L	10.2	2.6	1	03/15/16 00:00	03/17/16 16:48	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	78	%	33-120		1	03/15/16 00:00			
2-Fluorobiphenyl (S)	78	%	39-120		1	03/15/16 00:00			
Terphenyl-d14 (S)	95	%	45-120		1	03/15/16 00:00			
Phenol-d6 (S)	33	%	11-120		1		03/17/16 16:48		
2-Fluorophenol (S)	45	%	17-120		1	03/15/16 00:00			
2,4,6-Tribromophenol (S)	98	%	39-120		1	03/15/16 00:00	03/17/16 16:48	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA	3270 by SIM	I Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	03/15/16 00:00	03/16/16 20:33	53-70-3	
2-Fluorobiphenyl (S)	78	%	21-117		1	03/15/16 00:00	03/17/16 16:48	321-60-8	
Terphenyi-d14 (S)	95	%	21-131		1	03/15/16 00:00	03/17/16 16:48	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA	1664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		03/29/16 08:15		
2540F Total Settleable Solids	Analytical	Method: SM 2	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		03/10/16 14:00		
Phenolics, Total Recoverable	Analytical	Method: EPA	420.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.020	1		03/25/16 14:59		

REPORT OF LABORATORY ANALYSIS



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

MPRP/35142

QC Batch Method: **EPA 3010**

Analysis Method:

EPA 6010

Associated Lab Samples:

60214598002

Analysis Description:

6010 MET

METHOD BLANK: 1722924

Matrix: Water

ND

Associated Lab Samples:

60214598002

Blank Result

Reporting Limit

0.050

MDL

0.0071

Analyzed 03/14/16 17:31 Qualifiers

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1722925

Spike

LCS

LCS % Rec % Rec

Zinc

Zinc

Zinc

Units mg/L

Units

mg/L

Conc.

Result

101

1.2

Limits

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1722926

1722927

1.0

60214558001

252 ug/L

Units

mg/L

MSD Spike

1

MSD

MS % Rec MSD % Rec

Max

RPD RPD Qual

Parameter

MS Spike Result Conc.

Conc. 1

MS Result Result 1.2

96

% Rec

Limits 75-125

20



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

MPRP/35204

Analysis Method: Analysis Description: EPA 6010 6010 MET

QC Batch Method: EPA 3010

Associated Lab Samples: 60214598001

METHOD BLANK: 1725469

Matrix: Water

Associated Lab Samples:

60214598001

Blank

Reporting

Limit

Analyzed

Qualifiers

Zinc

Units

mg/L

Units

Result

ND 0.050 MDL 0.0071

103

03/17/16 10:33

LABORATORY CONTROL SAMPLE: 1725470

Parameter

Parameter

Parameter

Date: 04/04/2016 12:40 PM

Spike Conc.

LCS Result

LCS % Rec

MSD

% Rec Limits

Zinc

mg/L

1.0

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1725471

0.065

MSD

1725472 MS

MS

MSD % Rec % Rec

Max

Zinc

60214598001 Units Result

mg/L

MS Spike Conc.

Spike Conc.

Result Result 1.1

% Rec 101

Limits 101 75-125

RPD RPD

Qual 20



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

MPRP/35251

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

ND

6010 MET Dissolved

Associated Lab Samples:

60214598001, 60214598002

METHOD BLANK: 1727949

Matrix: Water

Associated Lab Samples:

60214598001, 60214598002

Blank

Reporting

MDL

Analyzed

Qualifiers

Parameter Zinc, Dissolved

Units

mg/L

Result

Limit 0.050

0.0071 03/22/16 13:09

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Date: 04/04/2016 12:40 PM

1727950

Units

mg/L

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc, Dissolved

Zinc, Dissolved

Units mg/L

103

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1727951

1727952

1.0

MS

Result Conc.

0.021J

MSD Spike

MSD

MS MSD % Rec % Rec

% Rec Limits

Max

RPD RPD Qual

MS 60214598001 Spike

Conc.

Result Result 1.0 1.0

101

100 75-125



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

OEXT/53450

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples: 60214598001, 60214598002

METHOD BLANK: 1724383

Date: 04/04/2016 12:40 PM

Matrix: Water

Associated Lab Samples: 60214598001, 60214598002

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	10.0	2.5	03/17/16 12:32	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	03/17/16 12:32	
Pentachlorophenol	ug/L	ND	10.0	2.5	03/17/16 12:32	
Phenanthrene	ug/L	ND	10.0	2.5	03/17/16 12:32	
Pyrene	ug/L	ND	10.0	2.5	03/17/16 12:32	
2,4,6-Tribromophenol (S)	%	105	39-120		03/17/16 12:32	
2-Fluorobiphenyl (S)	%	89	39-120		03/17/16 12:32	
2-Fluorophenol (S)	%	49	17-120		03/17/16 12:32	
Nitrobenzene-d5 (S)	%	86	33-120		03/17/16 12:32	
Phenol-d6 (S)	%	31	11-120		03/17/16 12:32	
Terphenyl-d14 (S)	%	107	45-120		03/17/16 12:32	

ABORATORY CONTROL SAMPLE:	1724384	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cenaphthene	ug/L	50	43.2	86	51-120	
ndeno(1,2,3-cd)pyrene	ug/L	50	48.1	96	52-120	
entachlorophenol	ug/L	50	50.4	101	47-120	
henanthrene	ug/L	50	44.8	90	54-120	
yrene	ug/L	50	45.8	92	56-115	
4,6-Tribromophenol (S)	%			107	39-120	
Fluorobiphenyl (S)	%			90	39-120	
Fluorophenol (S)	%			52	17-120	
trobenzene-d5 (S)	%		i	92	33-120	
enol-d6 (S)	%			34	11-120	
rphenyl-d14 (S)	%			99	45-120	

MATRIX SPIKE SAMPLE:	1724385						
		60214598001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	ND ND	51	37.3	73	48-120	
Indeno(1,2,3-cd)pyrene	ug/L	ND	51	43.8	86	50-120	
Pentachlorophenol	ug/L	ND	51	47.3	93	43-135	
Phenanthrene	ug/L	ND	51	39.5	77	54-120	
Pyrene	ug/L	ND	51	42.2	83	53-115	
2,4,6-Tribromophenol (S)	%				96	39-120	
2-Fluorobiphenyl (S)	%				76	39-120	
2-Fluorophenol (S)	%				40	17-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS





Project:

SW Monthly 001/002

Pace Project No.:

Date: 04/04/2016 12:40 PM

60214598

MATRIX SPIKE SAMPLE:	1724385	60214598001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)	 %				77	33-120	
Phenol-d6 (S)	%				28	11-120	
Terphenyl-d14 (S)	%				91	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

OEXT/53451

Analysis Method:

EPA 8270 by SIM

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water PAH by SIM MSSV

Associated Lab Samples:

60214598001, 60214598002

METHOD BLANK: 1724386

Matrix: Water

Associated Lab Samples: 60214598001, 60214598002

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Blank	Reporting			.
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Dibenz(a,h)anthracene	ug/L	ND	0.10	0.040	03/16/16 19:00	
2-Fluorobiphenyl (S)	%	89	21-117		03/17/16 12:32	
Terphenyl-d14 (S)	%	107	21-131		03/17/16 12:32	

LABORATORY CONTROL SAMPLE:	1724387	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L	1	1.0	100	37-122	
2-Fluorobiphenyl (S)	%			85	21-117	
Terphenyl-d14 (S)	%			84	21-131	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 17243	88		1724389							
Parameter	6 Units	0214598001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
Dibenz(a,h)anthracene 2-Fluorobiphenyl (S) Terphenyl-d14 (S)	ug/L % %	ND	1	1	0.97	1.0	94 82 89	100 81 78	14-140 21-117 21-131	7	50	



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

WET/60866

Analysis Method:

EPA 1664A

QC Batch Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

60214598001, 60214598002

METHOD BLANK: 1732167

Matrix: Water

Associated Lab Samples:

60214598001, 60214598002

Blank

Reporting Limit

5.0

MDL Analyzed Qualifiers

Oil and Grease

Units mg/L

Result ND

5.0 03/29/16 08:10

78-114 M1

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1732168

Spike

LCS

LCS % Rec % Rec Limits

Qualifiers

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

mg/L

Conc. 40 Result 36.2

90

78-114

MATRIX SPIKE SAMPLE:

1732169

Parameter

60215320001 Units Result

4310

ND

Spike Conc.

51.9

MS Result

12700

MS % Rec

16245

18

% Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1732170

Date: 04/04/2016 12:40 PM

Parameter

Units

mg/L

60214598001 Result

Dup Result ND

RPD

Max RPD

Qualifiers



Project:

SW Monthly 001/002

Pace Project No.:

60214598

QC Batch:

WETA/38698

Analysis Method:

EPA 420.1

QC Batch Method:

EPA 420.1

Analysis Description:

420.1 Phenolics Macro

MDL

0.011

Associated Lab Samples:

60214598001, 60214598002

METHOD BLANK: 1730470

Matrix: Water

ND

Associated Lab Samples:

Phenolics, Total Recoverable

60214598001, 60214598002

Blank

Reporting

Result

Limit

0.050

Analyzed

03/25/16 14:45

Qualifiers

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

Parameter

Parameter

1730471

Spike Conc.

LCS Result

ND

ND

ND

LCS % Rec % Rec

Phenolics, Total Recoverable

Units mg/L

Units

mg/L

Units

mg/L

mg/L

Units

mg/L

.5

0.50

99

Limits 90-110 Qualifiers

MATRIX SPIKE SAMPLE:

1730472

60215108001

Spike Conc.

.5

.5

ND

MS Result

MS % Rec

99

101

% Rec Limits

90-110

90-110

Qualifiers

MATRIX SPIKE SAMPLE:

Phenolics, Total Recoverable

Phenolics, Total Recoverable

Phenolics, Total Recoverable

1730474

60214598001 Result

Result

Spike Conc.

MS Result

0.51

0.51

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1730473

Units

60215195001 Result

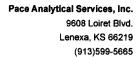
Dup Result

RPD

Max RPD

Qualifiers

20





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60214598

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 04/04/2016 12:40 PM

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.:

60214598

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60214598001	OUTFALL 001	EPA 3010	MPRP/35204	EPA 6010	ICP/25768
60214598002	OUTFALL 002	EPA 3010	MPRP/35142	EPA 6010	ICP/25736
60214598001 60214598002	OUTFALL 001 OUTFALL 002	EPA 3010 EPA 3010	MPRP/35251 MPRP/35251	EPA 6010 EPA 6010	ICP/25795 ICP/25795
60214598001 60214598002	OUTFALL 001 OUTFALL 002	EPA 625 EPA 625	OEXT/53450 OEXT/53450	EPA 625 EPA 625	MSSV/17374 MSSV/17374
60214598001 60214598002	OUTFALL 001 OUTFALL 002	EPA 3510 EPA 3510	OEXT/53451 OEXT/53451	EPA 8270 by SIM EPA 8270 by SIM	MSSV/17373 MSSV/17373
60214598001 60214598002	OUTFALL 001 OUTFALL 002	EPA 1664A EPA 1664A	WET/60866 WET/60866		
60214598001 60214598002	OUTFALL 001 OUTFALL 002	SM 2540F SM 2540F	WET/60537 WET/60537		
60214598001 60214598002	OUTFALL 001 OUTFALL 002	EPA 420.1 EPA 420.1	WETA/38698 WETA/38698		



Sample Condition Upon Receipt



Client Name: Earth Con - IP					Optional
	PEX 🗆	ECI 🗆	Pace Other	Client 🗆	Proj Due Date:
Tracking #: J457 326 456 4, 445 7, 446 6	ace Ship	oping Label U	Jsed? Yes □ N	o 🗆	Proj Name:
Custody Seal on Cooler/Box Present: Yes & No I	-		′es 🕻 No 🗆		
Packing Material: Bubble Wrap Bubble Bag	s 🗱	Foam (] None □	Other □	
CF +1.0 CF 0.8	pe of Ice	Wet Blu	te None □ Samp	les received on	ice, cooling process has begun.
Cooler Temperature: 3.0 4.2 3.4	,	(circle	·		ls of person examining
Temperature should be above freezing to 6°C	······································			contents:	D 10
Chain of Custody present:	Yes [□No □N/A	1.		
Chain of Custody filled out:	XYes [□N/A	2.		
Chain of Custody relinquished:	X Yes C	ONo □N/A	3.	***************************************	
Sampler name & signature on COC:	≱Yes □	□No □N/A	4.		
Samples arrived within holding time:	Yes [□No □N/A	5.		
Short Hold Time analyses (<72hr):	XoYes □	□No □N/A	6. 55		
Rush Turn Around Time requested:	□Yes V	ØNo □N/A	7.		
Sufficient volume:	X Yes □	JNo □N/A	8.		
Correct containers used:	Kives C	JNo □N/A			
Pace containers used:	10 Yes	□No □N/A	9.		
Containers intact:	Ø Yes □	□No □N/A	10.		
Unpreserved 5035A soils frozen w/in 48hrs?	□Yes □	DNo ØŠN/A	11.		
Filtered volume received for dissolved tests?	□Yes □	DNo M N/A	12.		
Sample labels match COC:	Ø Yes □	□No □N/A			
Includes date/time/ID/analyses Matrix:	WT		13.		
All containers needing preservation have been checked.	ØYes []No □N/A			
All containers needing preservation are found to be in compliance with EPA recommendation.	E É Yes □	□No □N/A	14.		
Exceptions: VOA, Coliforn, O&G, WI-DRO (water)	Ayes C	JNo	Initial when completed		# of added ervative
Trip Blank present:	□Yes □	DNo ØN/A			
Pace Trip Blank lot # (if purchased):			15,		
Headspace in VOA vials (>6mm):	□Yes □	□No K IN/A			
			16.		
Project sampled in USDA Regulated Area:	□Yes □	JNo K IN∕A	17. List State:		
Additional labels attached to 5035A vials in the field?	□Yes □	JNo \$26N/A	18.		
	C to Client	17 Y / (S) Field Data F	Required? Y	/ N
Person Contacted: Dat	e/Time:				
Comments/ Resolution:	*************************				
\	······································				
Project Manager Review:		l	Date: 3-10-1	<u> </u>	



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Required	A 9 Client Information:	Section B Required Pro							and the last of th	e infor														Pa	ge:		c	f		
Company	EarthCon Site Services Inc	Report To: S		-			•••••		Attent			nemi l		-										:						
Address:	1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: L	orenzo	Pittsley (lorenzow	p3@yaho	o.com)		Comp	any Na	me:	Eart	hCor	Site	Ser	vices	s Inc			REG	ULA	TOR	Y AG	ENC	NCY					
	Marietta GA 30062	A	Mison Le	evinson (alevinsor	n@earthc	on.com)		Addre	88.										F 1	NPDI	ES	Γ.	GROU	JND \	WATE	RF	DRINKING	WATER	
Email To	sharvey@earthcon.com	Purchase On	der No.:			· · · · · · · · · · · · · · · · · · ·			Pace C Refere											广 (UST		r 1	RCRA			Г (THER		
Phone:	770-973-2100 Fax: 770-973-7395	Project Name	SW	Monthly	001/002				Pase F Manag		Tr	udy (ipso	n 91	3-56	3-14	105			Site	Loc	rtion								
Request	ed Due Date/TAT: STANDARD	Project Numb	er. Inte	mational	Paper - J	Joplin, MC	l	ŀ		rofile#	84	98 L	ine 1		····	,		***************************************			ST	ITE:	-	Miss	Our	_ [
		4	1 7	4		311									100		Req	uest	ed A	naly	sis i	ilter	ed ((IN)		V ///				
:	Section D Valid Matrix C Required Client Information MATRIX Damking WATER WATER WASTE WATER PRODUCT SQL/SOLID	b ML MAL DM	(see valid codes to left) (G=GRAB_C=COMP)	COMP STA	OSITE	ECTED COMPO END/G	SITE RAB	OLLECTION			Pro	eserv	ative:	S	T N/A					,000	inimacene)					(Y/N)				
ITEM#	SAMPLE ID OR (A-Z, 0-91,-) Sample IDs MUST BE UNIQUE TISSUE	OL WP AR OT TS	MATRIX CODE (800 SAMPLE TYPE (G=GF	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COL	# OF CONTAINERS	Unpreserved	HNO,	모	NayS ₂ O ₃	Methanol	Other	A Antanyoro Tube.	Phenois	Settleable Solids	Total Recoverable Zinc	825 BNA*	8270 SiM (Liberiz(a,r)animacene)	Dissolved Zinc				Residual Chlorine (Y/N)		02 4º	798 0./ Lab I.D.	
1	(13) KIN (2) AGIH OUTFALL OOT BAN I	NIN AGIC	WT G	xxx	ххх	2946	10:46		18	14	1 1	2		Ш		<u> </u>	××	×	х	×	x >	×		Bu		Ш	RQS		<u> W</u>	
2	Will 1 OUTFALL 002	4 4	wr G	жж	xxx	3/9/16	11:45		12	8	1 1	2		$oxed{oxed}$		Ŀ	x x	х	х	x	x >	×		1		Щ			wz	
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12				<u>.</u>		1	DATI		!	DME.		Щ		CCEP		1	LEGI I			\dashv	DA	<u> </u>		IME	+		SAMP	E CONDITI	ONS	
*Acenar	ADDITIONAL COMMENTS ohtherne - Indeno(1,2,3-cd)pyrene - Pentachiorophenol			IISHED BY		18000000000	\$		* . 320	-2803 4	+			7	7			7		+		90			1	1	.,	./	17	
Phenan	threne - Pyrene	100	enz	Pil	Zslov,	X	3/9/	16	12	:30	4	***************************************	4	_			P	Me -	<u>*</u>	\dashv	3/1	<u> </u>	Ma	40	3,		-7 1	- <u>y</u> -	- 	
Subco	ntract to Pace-Minn				,		1						<u>/</u>					······		_			1_		4		<u> </u>	У	<u>y</u>	
	Destroyer in the different of the state of Equation (4) and the state of the state					411															***********				4	ા	у	4	<u>y</u>	
-																														
	N	<u></u>	,		SAMPL		AND SIGN ne of SAMI RE of SAMI	PLER	: L	or 1	e,v	z 0	P	110	5 l :	ey	UAIL	Sigr	ned	<u> </u>	9	7 7	7			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (YN)	



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Trudy Gipson **PACE Kansas** 9608 Loiret Blvd Lenexa KS 66219

> **REPORT OF LABORATORY ANALYSIS FOR** PCDD/PCDF

Report Information:

Pace Project #: 10341193

Sample Receipt Date: 03/11/2016

Client Project #: 60214598

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

March 18, 2016

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Page 26 of 40

Report Prepared Date:

March 17, 2016



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis. MN 55414

Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. The reporting limits were set to 4.4 pg/L.

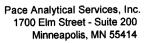
The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 53-103%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean water or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 92-133% with relative percent differences (RPDs) of 0.5-39.6%. The background-subtracted recovery values obtained for 1,2,3,4,6,7,8-HpCDD and OCDD in the matrix spike samples were outside the target range. Also, the RPD value obtained for OCDD in these analyses was above the 20% target upper limit. These deviations may be due to variability between the sample aliquots.

REPORT OF LABORATORY ANALYSIS





Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
lowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q
Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

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Report No.....10341031 Page 28 of 40

Appendix A

Sample Management



Report No.....10341193 Workorder: 60214598 Workorder Name: SW Monthly 001/002 Owner Received Date: 3/10/2016 Results Requested By: 4/1/2016 Report To Subcontract To Trudy Gipson Pace Analytical Minnesota Pace Analytical Services, Inc. 1700 Elm Street 9608 Loiret Blvd. Suite 200 Lenexa, KS 66219 Minneapolis, MN 55414 Phone (913)599-5665 Phone (612)607-1700 Fax (913)599-1759 _1613B served Containers 1613 Dioxin ample Collect Item L Sample ID Date/Time LAB USE ONLY OUTFALL 001 RQS 3/9/2016 10:46 60214598001 Water Х al OUTFALL 002 3/9/2016 11:45 2 Х 60214598002 Water CUD Report Only Dioxins Date/Time Released By Received Date/Time **Transfers** Run QC on 60214598001 3/1/106 ((Sheed 4.4 pg/L Need EDD Cooler Temperature on Receipt ℨ- ➢ °C Samples Intact Y o Ν Custody Seal / or Received on Ice (Y

Page 5 of 15



Document Name: Sample Condition Upon Receipt Form

Document No.: F-MN-L-213-rev.15 Document Revised: 05Jan2016
Page 1 of 1
Issuing Authority:

Pace Minnesota Quality Office

Sample Condition Upon Receipt Client Name:		Projec	**: W0#:10341193
Courier: Defed Ex DUPS	USPS		
Commercial Pace SpeeDee	Other:	Client	
Tracking Number: 6508 6165 8540			10341193
Custody Seal on Cooler/Box Present? Yes No	Se:	als Intact?	Yes No Optional: Proj. Due Date: Proj. Name:
Packing Material: Bubble Wrap Bubble Bags	□None	Other:_	Temp Blank? ☐Yes ☐No
Thermometer ☐ 151401163 ☐ B88A91216750 ☐ Used: ☐ 151401164 ☐ B88A01433100		fice: 154W	et Blue None Samples on ice, cooling process has begun
Cooler Temp Read (°C): 3.7 Cooler Temp Co Temp should be above freezing to 6°C Correction Fac			Biological Tissue Frozen? ☐Yes ☐No ☑N/A
USDA Regulated Soil (N/A, water sample)	101; <u>70.1</u>	Da	ate and Initials of Person Examining Contents: _ ウン 3(1))
Did samples originate in a quarantine zone within the United	States: AL, AR,	AZ, CA, FL, GA	, ID, LA. Did samples originate from a foreign source (internationally,
MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)?		□Yes	No including Hawaii and Prierto Rico)? Tyes No
it ves to either question, fill out a Reg	ulated Soil Cl	necklist (F-MN	-Q-338) and include with SCJR/CQC paperwork.
			COMMENTS:
Chain of Custody Present?	XX res]No □N/A	1.
Chain of Custody Filled Out?	[koves []No □N/A	2.
Chain of Custody Relinquished?	X Yes [□No □N/A	3.
Sampler Name and/or Signature on COC?	☐Yes [No ZON/A	4.
Samples Arrived within Hold Time?	Z ∳Yes [No □N/A	5.
Short Hold Time Analysis (<72 hr)?	Yes [ØNo □N/A	6.
Rush Turn Around Time Requested?	☐Yes	ZNos	7.
Sufficient Volume?	-	AVE OVE	
Correct Containers Used?	9	ing a bing	9.
-Pace Containers Used?	•	JNO A TINA	
Containers Intact?		No □N/A	10.
Filtered Volume Received for Dissolved Tests?		No ØN/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?		No □N/A	12.
-Includes Date/Time/ID/Analysis Matrix:	Eles [7140 MAY	12.
All containers needing acid/base preservation have been		· · · · · · · · · · · · · · · · · · ·	
checked?	□Yes □]No [28N/A	13. ☐HNO₃ ☐H₂SO₄ ☐NaOH ☐HCI
All containers needing preservation are found to be in compliance with EPA recommendation?		ľ	Sample #
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	□Yes □	No P N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease,		۱۹۸۸ تیم	Initial when Lot # of added
DRO/8015 (water) DOC	Yes V	No □N/A	completed: preservative:
Headspace in VOA Vials (>6mm)?		No PN/A	14.
Trip Blank Present?		INO PINA	15.
Trip Blank Custody Seals Present?	□Yes □]No ⊯2N/A	
Pace Trip Blank Lot # (if purchased):		·	1
CLIENT NOTIFICATION/RESOLUTION Person Contacted:			Field Data Required? ☐Yes ☐No Date/Time:
Comments/Resolution:			Date/ line.
	····		
	·		
Dual and BA	<u> </u>		<u> </u>
Project Manager Review:	$\boldsymbol{\mathcal{U}}$. Date: <u>63 ((</u>

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Report No.....10341193_1613B



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID	OUTFALL 001
Lab Sample İD	60214598001
Filename	U160316B_12
Injected By	SMT
Total Amount Extracted	961 mL
% Maietura	NΔ

% Moisture NA
Dry Weight Extracted NA
ICAL ID U160204
CCal Filename(s) U160316A_16
Method Blank ID BLANK-49399

Matrix	Water	
Dilution	NA	
Collected	03/09/2016	10:46
Received	03/11/2016	11:00
Extracted	03/14/2016	11:10
Analyzed	03/17/2016	06:45

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00	92 94
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C	2.00 2.00 2.00	79 73 63
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD	ND	—— 9.5	4.4 4.4 IJ	OCDD-13C 1,2,3,4-TCDD-13C	4.00 2.00	58 NA
1,2,3,7,8,9-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	68.0	6.8	4.4 IJ 4.4	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	420.0 840.0		4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	97
OCDD	4700.0		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected NA = Not Applicable

NC = Not Calculated

J = Estimated value

A = Reporting Limit based on signal to noise

I = Interference present

<u>Pace Analytical</u>

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By

OUTFALL 002 60214598002 U160316B_13 SMT

Total Amount Extracted % Moisture **Dry Weight Extracted** ICÁL ID

968 mL NA NA U160204 U160316A 16 Matrix Water Dilution NA Collected

03/09/2016 11:45

CCal Filename(s) Method Blank ID BLANK-49399

03/11/2016 11:00 Received Extracted 03/14/2016 11:10 Analyzed 03/17/2016 07:32

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	ND		4.4	2,3,7,8-TCDD-13C	2.00	102
Total TCDD	ND	***************************************	4.4	1,2,3,7,8-PeCDD-13C	2.00	103
				1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	ND		4.4	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	ND		4.4	1,2,3,4,6,7,8-HpCDD-13C	2.00	57
				OCDD-13C	4.00	53
1,2,3,4,7,8-HxCDD	ND		4.4		1.00	
1,2,3,6,7,8-HxCDD	ND	-	4.4	1,2,3,4-TCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD	ND		4.4	1,2,3,7,8,9-HxCDD-13C	2.00	
Total HxCDD	ND			1,2,3,7,0, 3 -HXCDD-13C	2.00	NA
TOTALLIXCOD	ND		4.4	0.0.7.0.7077		
400407011000				2,3,7,8-TCDD-37Cl4	0.20	110
1,2,3,4,6,7,8-HpCDD	57		4.4			
Total HpCDD	140		4.4			
OCDD	750		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected NA = Not Applicable NC = Not Calculated

J = Estimated value

A = Reporting Limit based on signal to noise

I = Interference present

REPORT OF LABORATORY ANALYSIS



Method 1613B Blank Analysis Results

Lab Sample ID Filename

Total Amount Extracted ICAL ID

CCal Filename(s)

BLANK-49399 F160316A 06 1020 mL

F160115 F160316A_01 Matrix Dilution

Water NA

Extracted Analyzed Injected By

03/14/2016 11:10 03/16/2016 13:35

SMT

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	94 107 81
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	74 68 66
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	ND ND ND		4.4 4.4 4.4	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND ND	_	4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	89
OCDD	ND		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit



Method 1613B Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted

ICAL ID
CCal Filename
Method Blank ID

LCS-49400 F160316A_02 1020 mL F160115 F160316A_01 BLANK-49399

Matrix Dilution Extracted

Water NA

Extracted 03/14/2016 11:10 Analyzed 03/16/2016 10:45 Injected By SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	10 50 50 50 50 50 50	10 51 62 63 67 56 120	6.7 35.0 35.0 38.0 32.0 35.0 78.0	15.8 71.0 82.0 67.0 81.0 70.0 144.0	101 102 124 126 133 112	
2,3,7,8-TCDD-37Cl4 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	10 100 100 100 100 100 200	9.4 94 110 79 76 75	3.1 20.0 21.0 21.0 25.0 26.0 26.0	19.1 175.0 227.0 193.0 163.0 166.0 397.0	94 94 108 79 76 75 67	

Cs = Concentration Spiked (ng/mL)

Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

^{* =} See Discussion



Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Total Amount Extracted ICAL ID

CCal Filename(s) Method Blank ID

OUTFALL 001-MS 60214598001-MS U160316B 14

978 mL U160204 U160316A 16

BLANK-49399

Water Matrix Dilution NA

Extracted Analyzed Injected By 03/14/2016 11:10 03/17/2016 08:18

SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.18	92	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	107 113 83
1,2,3,7,8-PeCDD Total PeCDD	1.00	1.01	101	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	92 75 65
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.18 1.21 1.33	118 121 133	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	2.07	207	2,3,7,8-TCDD-37Cl4	0.20	116
OCDD	2.00	13.68	684			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

REPORT OF LABORATORY ANALYSIS



Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID

Filename
Total Amount Extracted

ICAL ID

CCal Filename(s) Method Blank ID OUTFALL 001-MSD 60214598001-MSD

U160316B_15 975 mL

U160204 U160316A_16 BLANK-49399 Matrix

Dilution Extracted Analyzed Water

NA 02/14

03/14/2016 11:10 03/17/2016 09:05

Injected By SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.19	93	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	98 107 79
1,2,3,7,8-PeCDD Total PeCDD	1.00	1.01	101	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00	76 56 56
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.10 1.18 1.13	110 118 113	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.85	185	2,3,7,8-TCDD-37Cl4	0.20	102
OCDD	2.00	9.16	458			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID OUTFALL 001 60214598001 60214598001-MS 60214598001-MSD

Sample Filename MS Filename MSD Filename U160316B_12 U160316B_14 U160316B_15 Dry Weights Sample Amount MS Amount MSD Amount

NA NA NA

	Sample Conc.	MS/MSD Qs	SD Qs MS Qm MSD Qm			Background Subtracted			
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD	
2,3,7,8-TCDD	0.000	0.20	0.18	0.19	1.2	92	93	1.2	
1,2,3,7,8-PeCDD	0.000	1.00	1.01	1.01	0.5	101	101	0.5	
1,2,3,4,7,8-HxCDD	0.000	1.00	1.18	1.10	7.1	118	110	7.1	
1,2,3,6,7,8-HxCDD	0.000	1.00	1.21	1.18	2.4	120	117	2.4	
1,2,3,7,8,9-HxCDD	0.000	1.00	1.33	1.13	16.4	132	112	16.5	
1,2,3,4,6,7,8-HpCDD	420.164	1.00	2.07	1.85	11.4	166	144	14.4	
OCDD	4726.383	2.00	13.68	9.16	39.6	453	228	66.2	

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference

NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan

T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa





May 06, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60216780

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on April 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

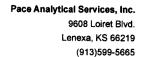
Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60216780

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021 Kansas Field Laboratory Accreditation: # E-92587

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60216780

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60216780001	OUTFALL 001	Water	04/11/16 10:40	04/12/16 08:40
60216780002	OUTFALL 002	Water	04/11/16 11:24	04/12/16 08:40



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.:

60216780

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60216780001	OUTFALL 001	EPA 6010	SMW	1	PASI-K
		EPA 6010	NDJ	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	NAW	- 3	PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	CRS	1	PASI-K
		EPA 420.1	RAB	1	PASI-K
60216780002	OUTFALL 002	EPA 6010	SMW	1	PASI-K
		EPA 6010	NDJ	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	NAW	3	PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	CRS	1	PASI-K
		EPA 420.1	RAB	1	PASI-K



Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method: Description: 6010 MET ICP

EPA 6010

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

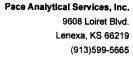
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method:

EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method: Description: 625 MSSV

EPA 625

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WET/61516

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60217499001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1749239)
 - · Oil and Grease

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method: SM 2540F

Description: 2540F Total Settleable Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

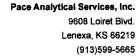
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60216780

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

May 06, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.:

Date: 05/06/2016 08:39 AM

60216780

Sample: OUTFALL 001	Lab ID:	60216780001	Collected	: 04/11/1	6 10:40	Received: 04	/12/16 08:40 M	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA 6	010 Prepara	ation Meth	od: EPA	3010			
Zinc, Total Recoverable	0.064	mg/L	0.050	0.0071	1	04/14/16 14:30	04/15/16 13:47	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepara	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.019J	mg/L	0.050	0.0071	1	04/13/16 17:00	04/14/16 09:40	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	25 Preparat	ion Metho	d: EPA (625			
Acenaphthene	ND	ug/L	10.2	2.6	1	04/14/16 00:00	04/15/16 16:20	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.2	2.6	1	04/14/16 00:00	04/15/16 16:20	193-39-5	
Pentachlorophenol	ND	ug/L	10.2	2.6	1	04/14/16 00:00	04/15/16 16:20	87-86-5	
Phenanthrene	ND	ug/L	10.2	2.6	1	04/14/16 00:00	04/15/16 16:20	85-01-8	
Pyrene	ND	ug/L	10.2	2.6	1	04/14/16 00:00	04/15/16 16:20	129-00-0	
Surrogates		-							
Nitrobenzene-d5 (S)	85	%	33-120		1	04/14/16 00:00	04/15/16 16:20	4165-60-0	
2-Fluorobiphenyl (S)	89	%	39-120		1	04/14/16 00:00	04/15/16 16:20	321-60-8	
Terphenyl-d14 (S)	92	%	45-120		1	04/14/16 00:00	04/15/16 16:20	1718-51-0	
Phenol-d6 (S)	26	%	11-120		1	04/14/16 00:00	04/15/16 16:20	13127-88-3	
2-Fluorophenol (S)	41	%	17-120		1	04/14/16 00:00	04/15/16 16:20	367-12-4	
2,4,6-Tribromophenol (S)	101	%	39-120		1	04/14/16 00:00	04/15/16 16:20	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparation	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	04/14/16 00:00	04/15/16 23:01	53-70-3	
2-Fluorobiphenyl (S)	78	%	21-117		5	04/14/16 00:00	04/16/16 18:45	321-60-8	
Terphenyl-d14 (S)	78	%	21-131		5	04/14/16 00:00	04/16/16 18:45	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		04/29/16 08:44		
2540F Total Settleable Solids	Analytical	Method: SM 25	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		04/12/16 11:45		
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		04/13/16 12:00		



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60216780

Sample: OUTFALL 002	Lab ID:	60216780002	Collected	04/11/16	3 11:24	Received: 04/	12/16 08:40 Ma	atrix: Water	
			Report				A a b a a	CACNG	0
Parameters	Results	Units -	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qua
6010 MET ICP	Analytical	Method: EPA 6	010 Prepara	ation Meth	od: EPA	3010			
Zinc, Total Recoverable	0.048J	mg/L	0.050	0.0071	1	04/14/16 14:30	04/15/16 13:58	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	6010 Prepara	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.032J	mg/L	0.050	0.0071	1	04/13/16 17:00	04/14/16 09:46	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	325 Preparat	ion Metho	d: EPA	625			
Acenaphthene	ND	ug/L	10.0	2.5	1	04/14/16 00:00	_		
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	2.5	1		04/15/16 16:41		
Pentachlorophenol	ND	ug/L	10.0	2.5	1		04/15/16 16:41		
Phenanthrene	ND	ug/L	10.0	2.5	1		04/15/16 16:41		
Pyrene	ND	ug/L	10.0	2.5	1	04/14/16 00:00	04/15/16 16:41	129-00-0	
Surrogates					_		0445404040	4405.00.0	
Nitrobenzene-d5 (S)	79	%	33-120		1		04/15/16 16:41		
2-Fluorobiphenyl (S)	79	%	39-120		1	04/14/16 00:00			
Terphenyl-d14 (S)	84	%	45-120		1		04/15/16 16:41		
Phenol-d6 (S)	24	%	11-120		1	04/14/16 00:00			
2-Fluorophenol (S)	38	%	17-120		1	04/14/16 00:00			
2,4,6-Tribromophenol (S)	92	%	39-120		1	04/14/16 00:00	04/15/16 16:41	118-79-6	
8270 MSSV PAH by SIM	Analytica	I Method: EPA	8270 by SIM	Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene	ND	ug/L	0.10	0.040	1	04/14/16 00:00	04/15/16 23:57	53-70-3	
Surrogates 2-Fluorobiphenyl (S)	72	%	21-117		5	04/14/16 00:00	04/16/16 19:03	321-60-8	
Terphenyl-d14 (S)	71	%	21-131		5		04/16/16 19:03	1718-51-0	
HEM, Oil and Grease	Analytica	I Method: EPA	1664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		04/29/16 08:45		
2540F Total Settleable Solids	Analytica	il Method: SM 2	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		04/12/16 11:45		
Phenolics, Total Recoverable	Analytica	I Method: EPA	420.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		04/13/16 12:01		

REPORT OF LABORATORY ANALYSIS



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

MPRP/35549

Analysis Method:

Analysis Description:

EPA 6010 6010 MET

QC Batch Method: EPA 3010

Associated Lab Samples: 60216780001, 60216780002

METHOD BLANK: 1741591

Matrix: Water

ND

Associated Lab Samples:

60216780001, 60216780002

Blank

Reporting

Analyzed

Qualifiers

Zinc

Units mg/L Result

Limit 0.050

0.0071

MDL

04/15/16 13:43

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

1741592

Units

mg/L

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Zinc

Zinc

Units mg/L

0.96

96 80-120 Qualifiers

1741594

MS

Result

MSD Spike

MSD

MS

% Rec

Max

RPD RPD Qual

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1741593

MS 60216780001 Spike Result

Conc. 0.064

Conc.

Result 0.99 1.0 % Rec 92 % Rec Limits 75-125

MSD

2 20



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

MPRP/35538

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET Dissolved

MDL

Associated Lab Samples:

60216780001, 60216780002

METHOD BLANK: 1741026

Matrix: Water

Associated Lab Samples:

60216780001, 60216780002

Blank

Reporting

Analyzed

Qualifiers

Zinc, Dissolved

Units mg/L

Result ND Limit 0.050

0.0071

04/14/16 09:33

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1741027

Units

mg/L

Spike Conc.

LCS Result

LCS % Rec

95

% Rec Limits

Qualifiers

Zinc, Dissolved

Units mg/L

1741029

MS

0.96

0.95

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1741028

MSD Spike

MSD

MS MSD % Rec

94

% Rec

Max

Zinc, Dissolved

Parameter

60216780001 Result

Spike Conc. 0.019J

MS

Conc. Result

Result 0.95 % Rec 93 Limits 75-125

RPD RPD

Qual 0 20



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

OEXT/53867

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples: 60216780001, 60216780002

METHOD BLANK: 1741269

Matrix: Water

Associated Lab Samples:	60216780001,	60216780002
-------------------------	--------------	-------------

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	10.0	2.5	04/15/16 08:45	
ndeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	04/15/16 08:45	
Pentachlorophenol	ug/L	ND	10.0	2.5	04/15/16 08:45	
Phenanthrene	ug/L	ND	10.0	2.5	04/15/16 08:45	
^o yrene	ug/L	ND	10.0	2.5	04/15/16 08:45	
2,4,6-Tribromophenol (S)	%	93	39-120		04/15/16 08:45	
?-Fluorobiphenyl (S)	%	84	39-120		04/15/16 08:45	
?-Fluorophenol (S)	%	42	17-120		04/15/16 08:45	
litrobenzene-d5 (S)	%	79	33-120		04/15/16 08:45	
Phenol-d6 (S)	%	26	11-120	20 04/15/16 08:45		
erphenyi-d14 (S)	%	89	45-120		04/15/16 08:45	

ABORATORY CONTROL SAMPLE:	1741270	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cenaphthene	ug/L	50	38.8	78	51-120	
eno(1,2,3-cd)pyrene	ug/L	50	40.7	81	52-120	
tachlorophenol	ug/L	50	43.5	87	47-120	
nanthrene	ug/L	50	40.5	81	54-120	
ene	ug/L	50	39.8	80	56-115	
-Tribromophenol (S)	%			99	39-120	
orobiphenyl (S)	%			83	39-120	
orophenol (S)	%			41	17-120	
benzene-d5 (S)	%			79	33-120	
ol-d6 (S)	%			27	11-120	
henyl-d14 (S)	%			87	45-120	

MATRIX SPIKE SAMPLE:	1741271						
		60216780001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	ND	51	39.7	78	48-120	
Indeno(1,2,3-cd)pyrene	ug/L	ND	51	39.5	77	50-120	
Pentachlorophenol	ug/L	ND	51	39.6	78	43-135	
Phenanthrene	ug/L	ND	51	39.9	78	54-120	
Pyrene	ug/L	ND	51	39.5	77	53-115	
2,4,6-Tribromophenol (S)	%				102	39-120	
2-Fluorobiphenyl (S)	%				82	39-120	
2-Fluorophenol (S)	%				41	17-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS





Project:

SW Monthly 001/002

Pace Project No.: 60216780

Date: 05/06/2016 08:39 AM

MATRIX SPIKE SAMPLE:	1741271						
		60216780001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)	%				78	33-120	
Phenol-d6 (S)	%				26	11-120	
Terphenyl-d14 (S)	%				85	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

OEXT/53869

Analysis Method:

EPA 8270 by SIM

QC Batch Method: E

EPA 3510

Analysis Description:

Matrix: Water

8270 Water PAH by SIM MSSV

Associated Lab Samples:

s: 60216780001, 60216780002

METHOD BLANK: 1741275

Dibenz(a,h)anthracene

2-Fluorobiphenyl (S)

Terphenyl-d14 (S)

Parameter

Associated Lab Samples: 60216780001, 60216780002

Units

ug/L %

%

Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
ND	0.10	0.040	04/15/16 22:24	
69	21-117		04/16/16 18:26	
72	21-131		04/16/16 18:26	

LABORATORY CONTROL SAMPLE:	1741276	0.11		1.00	0/ Doo	
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L	1	0.89	89	37-122	
2-Fluorobiphenyl (S)	%			87	21-117	
Terphenyl-d14 (S)	%			85	21-131	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICA	(TE: 17412)	77		1741278							
Parameter	6 Units	0216780001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
- Tarameter												
Dibenz(a,h)anthracene	ug/L	ND	1	1	0.78	0.88	76	86	14-140	12	50	
2-Fluorobiphenyl (S)	%						86	88	21-117			
Terphenyl-d14 (S)	%						81	82	21-131			



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

WET/61516

Analysis Method:

EPA 1664A

QC Batch Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

60216780001, 60216780002

METHOD BLANK: 1749237

Matrix: Water

Associated Lab Samples:

60216780001, 60216780002

Blank

Reporting Limit

Parameter

Units

mg/L

Result ND MDL

5.0

Analyzed 04/29/16 08:42 Qualifiers

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1749238

Spike Conc.

LCS Result

111

ND

ND

LCS % Rec % Rec Limits

5.0

Qualifiers

Oil and Grease

Oil and Grease

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

40

38.6

96

78-114

MATRIX SPIKE SAMPLE:

1749239

Units

mg/L

60217499001 Result

Spike Conc.

40.8

ND

ND

MS Result

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1749240

Parameter

Parameter

Units

mg/L

mg/L

60216780001 Result

Dup Result

RPD

168

Max RPD

138

18

18

Qualifiers

78-114 M1

SAMPLE DUPLICATE: 1749241

60217417003 Units Result

Dup Result

RPD

Max RPD

Qualifiers

Date: 05/06/2016 08:39 AM



Project:

SW Monthly 001/002

Pace Project No.:

60216780

QC Batch:

WETA/38978

Analysis Method:

EPA 420.1

QC Batch Method:

EPA 420.1

Analysis Description:

ND

Matrix: Water

420.1 Phenolics Macro

Associated Lab Samples:

60216780001, 60216780002

METHOD BLANK: 1740362 Associated Lab Samples:

60216780001, 60216780002

Blank

Parameter

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

Parameter

Units mg/L Result

Reporting Limit

0.050

MDL

Analyzed

04/13/16 11:44

Qualifiers

Phenolics, Total Recoverable

1740363

Spike

LCS

ND

ND

ND

LCS

% Rec

0.011

Phenolics, Total Recoverable

mg/L

Units

Units

mg/L

Units

mg/L

Units

mg/L

Conc. .5 Result 0.52 % Rec 104 Limits 90-110 Qualifiers

MATRIX SPIKE SAMPLE:

1740364

60216267001 Result

Spike Conc.

.5

.5

0.012J

MS Result

MS % Rec

105

101

% Rec Limits

90-110

90-110

Qualifiers

MATRIX SPIKE SAMPLE:

Phenolics, Total Recoverable

Phenolics, Total Recoverable

Phenolics, Total Recoverable

1740366

60216780001 Result

Spike Conc.

MS Result

0.54

0.51

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1740365

60216524002 Result

Dup Result

RPD

Max RPD

Qualifiers

20





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60216780

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K

Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 05/06/2016 08:39 AM

М1

Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.:

60216780

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60216780001	OUTFALL 001	EPA 3010	MPRP/35549	EPA 6010	ICP/26001
60216780002	OUTFALL 002	EPA 3010	MPRP/35549	EPA 6010	ICP/26001
60216780001	OUTFALL 001	EPA 3010	MPRP/35538	EPA 6010	ICP/25991
60216780002	OUTFALL 002	EPA 3010	MPRP/35538	EPA 6010	ICP/25991
60216780001	OUTFALL 001	EPA 625	OEXT/53867	EPA 625	MSSV/17506
60216780002	OUTFALL 002	EPA 625	OEXT/53867	EPA 625	MSSV/17506
60216780001	OUTFALL 001	EPA 3510	OEXT/53869	EPA 8270 by SIM	MSSV/17512
60216780002	OUTFALL 002	EPA 3510	OEXT/53869	EPA 8270 by SIM	MSSV/17512
60216780001	OUTFALL 001	EPA 1664A	WET/61516		
60216780002	OUTFALL 002	EPA 1664A	WET/61516		
60216780001	OUTFALL 001	SM 2540F	WET/61157		
60216780002	OUTFALL 002	SM 2540F	WET/61157		
60216780001	OUTFALL 001	EPA 420.1	WETA/38978		
60216780002	OUTFALL 002	EPA 420.1	WETA/38978		



Sample Condition Upon Receipt

WO#:60216780

Client Name: Earth(on / Promo - IP	Optional
Courier: FedEx. □ UPS □ VIA □ Clay □ PEX □ ECI □	☐ Pace ☐ Other ☐ Client ☐ Proj Due Date:
Tracking #: 2828 0727 2386 Pace Shipping La	bel Used? Yes □ No □ Proj Name:
Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact	t: Yes.☑ No □
	pam □ None □ Other □
Thermometer Used: CF+1.0 CF-50 Type of Ice: (Fet	
Cooler Temperature: 2.3 1.1 0.9	(circle one) Date and initials of person examining contents:
Temperature should be above freezing to 6°C	contents: (4/12/16
Chain of Custody present: ☑Yes ☐No ☐	N/A 1.
Chain of Custody filled out: ☑Yes ☐No ☐	N/A 2.
Chain of Custody relinquished: ☑Yes ☐No ☐	N/A 3.
Sampler name & signature on COC: ☐Yes ☐No ☐	N/A 4.
	IN/A 5.
Short Hold Time analyses (<72hr):	IN/A 6. Soft 301
	IN/A 7,
	In/A 8.
	IN/A
	IN/A 9.
	JN/A 10.
	IN/A 11.
	3N/A 12.
Intered volume received for dissolved tests:	IN/A
Sample labels match COC:	
Includes date/time/ID/analyses Matrix: VT	13.]N/A
All the state of t	
All containers needing preservation are found to be in compliance with EPA recommendation.	□N/A 14. Lot # of added
Exceptions: VOA, Coliform, (&G, WI-DRO (water)	completed preservative
Trip Blank present: □Yes ☑No □	In/a
Pace Trip Blank lot # (if purchased):	15.
Headspace in VOA vials (>6mm): □Yes □No □	ZM/A
	16.
Project sampled in USDA Regulated Area:	₫Ñ/A 17. List State:
Additional labels attached to 5035A vials in the field?	ZN/A 18.
	/ P Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
- And	Date: 4-12.16
Project Manager Review:	Date: 7-12-14



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	d Client Information:		Section I Required		t Infor	nation:			l.			ion C	matio	n;		:									E	age:			of]
Compan	r EarthCon Si	e Services Inc	Report To:	She	rri Ha	arvey		*# * * * * * * * * * * * * * * * * *			Atten	tion.	S	herri	Harve	ý]									-	***		7.
Address	1880 W Oak	Pkwy Bldg 100 Ste 106	Сору То	Lon	enzo	Pittsley (orenzow	/p3@yaho	o.com)		Comp	any N	lame:	Ear	hCon	Site	Serv	ices	inc		RE	GUL	ATO	RY A	GEN	CY							1
	Marietta GA	30062		Alis	on Le	winson (alevinsor	n@earthc	on.com)		Addre	:SS:				٠	722. 1				F	NP	DES	T	GRO	DAND	WATE	ER 厂	DRIN	KING V	WATER		1
Email To	sharvey@ea	rthcon.com	Purchase	Order	No.:	······································					Pace :										7	US	Т	_	RCR	A		Г	OTHE	R			
Phone	770-973-2100	Fax: 770-973-7395	Project Na	me:	SW	Monthly (001/002					Project	Tr	rudy (Sipso	n 91	3-563	-140	5 .		s	ite Lo	catio	al .	1 4	***************************************							1
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	SAMPL (A-Z, 0-9 Sample IDs MUST	WATER WASTE WATER PRODUCT SOL/SOLID OIL WIPE AIR / -) OTHER	WT	CODE (see vaild codes to t	(G=GRAB	COMPA STAI		COMPO	SITE	MP AT COLLECTION	CONTAINERS	pa	270				s Test L			lids phie Zinc		270 SIM (Dibenz(a,h)anthracene)					Chlorine (Y/N)	60	216	76	30		
ITEM#	Cariple 155 (NCC)		:	MATRIX CC	SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONT	1	H ₂ SQ,	P P	Na ₂ S ₂ O ₃	Methanol	Other I Analysis	୦୫ଓ	Phenois	Settleable Solids	525 BNA*	1 20 1	1613 Dioxin**	1 1			Residual		e Proje				
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9								PRINT Nam			J- 0	re	l N Z	20	P	11:	5/4	Y	ATE S	igned	14	111	11	7			Temp in	Received or Ice (Y/N)	us(ody Se	Cooler (1	amples In	(X)	***************************************



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

Report Prepared for:

Trudy Gipson **PACE Kansas** 9608 Loiret Blvd Lenexa KS 66219

> **REPORT OF LABORATORY ANALYSIS FOR** PCDD/PCDF

Report Information:

Pace Project #: 10344656

Sample Receipt Date: 04/13/2016

Client Project #: 60216780

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

May 4, 2016



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

DISCUSSION

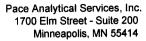
This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. The reporting limits were set to 4.4 pg/L.

The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 65-87%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean water or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 86-133% with relative percent differences (RPDs) of 1.8-38.6%. The background-subtracted recovery value obtained for OCDD in the matrix spike duplicate was above the target range. Also, the RPD value obtained for OCDD in the matrix spike analyses was above the 20% target upper limit. These deviations may be due to variability between the sample aliquots.

REPORT OF LABORATORY ANALYSIS





Tel: 612-607-1700 Fax: 612- 607-6444

Minnesota Laboratory Certifications

	Authority	Certificate #	Authority	Certificate #
=	A2LA	2926.01	Mississippi	MN00064
	Alabama	40770	Montana	92
	Alaska	MN00064	Nebraska	NE-OS-18-06
	Arizona	AZ0014	Nevada	MN_00064_200
	Arkansas	88-0680	New Jersey (NE	MN002
	California	01155CA	New York (NEL	11647
	Colorado	MN00064	North Carolina	27700
	Connecticut	PH-0256	North Dakota	R-036
	EPA Region 8	8TMS-Q	Ohio	4150
	Florida (NELAP	E87605	Oklahoma	D9922
*	Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
	Guam	959	Oregon (OREL	MN300001-001
	Hawaii	SLD	Pennsylvania	68-00563
	ldaho	MN00064	Puerto Rico	MN00064
	Illinois	200012	Saipan	MP0003
	Indiana	C-MN-01	South Carolina	74003001
	Indiana	C-MN-01	Tennessee	TN02818
	lowa	368	Texas	T104704192-08
	Kansas	E-10167	Utah (NELAP)	MN00064
	Kentucky	90062	Virginia	00251
	Louisiana	03086	Washington	C755
	Maine	2007029	West Virginia	9952C
	Maryland	322	Wisconsin	999407970
	Michigan	9909	Wyoming	8TMS-Q
	Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

Chain of Custody

Pace Analytical

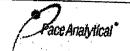
Repor Owner Received Date: 4/12/2016 Results Requested By: 5/4/2 **Workorder:** 60216780 Workorder Name: SW Monthly 001/002 Pace Analytical Minnesota Trudy Gipson 1700 Elm Street Pace Analytical Kansas 9608 Loiret Blvd Suite 200 Minneapolis, MN 55414 Lenexa, KS 66219 Phone (612)607-1700 **ਨ**Phone (913)599-5665 1613 Dioxin LAB USE ONLY MOI Χ 4 4/11/2016 10:40 60216780001 Water OUTFALL 001 RQS 002 2 60216780002 Water 4/11/2016 11:24 OUTFALL 002 Report only Dioxins Date/Time Date/Time Run (ac on 60216780001 Naci 4.4 pg/L **Transfers** Released B Need EDD Received on Ice Y or Samples Intact Y of Cooler Temperature on Receipt **Custody Seak** Ү ог

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Page 5 Of 12 2016 11:11:53 AM

FMT-ALL-C-002rev.00 24March2009

Page 1 of



Document Name: Sample Condition Upon Receipt Form

Document No.: F-MN-L-213-rev.15 Document Revised: 05Jan2016
Page 1 of 1
Issuing Authority:
Pace Minnesota Quality Office

Sample Condition Upon Receipt Client Name:		n Mari	Proj	"# WO#:10344656
Courier: Fed Ex UPS Commercial Page Tracking Number: 6703 CV	□USPS □Othe		Client	10344656
Curtody Sori on Control on Control	_ <i>5 & ∪</i>]no	Seals	Intact?	Yes No Optional: Proj. Due Date: Proj. Name:
Packing Material: Bubble Wrap Bubble 8	Bags No	:	Street 1	, its interior
Thermometer 151401163 B88A9121 Used: 151401164 B88A0143	67504 310098	ype of lo	□Omer:	Temp Blank? ☐ Tes ☐ No Vet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun
Cooler Temp Read (°C): Cooler Temp Temp should be above freezing to 6°C Correction	Corrected (°	C):	<u>u. </u>	Biological Tissue Frozen? Yes No NA
USDA Regulated Soil (N/A, water sample) Did samples originate in a quarantine zone within the Uni MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check mans)?	ted States: AL		CA, FL, G	AID, LA. Did samples originate from a foreign source (internationally
				COMMENTS:
Chain of Custody Present?	Z√es	□No	N/A	
Chain of Custody Filled Out?		No	□N/A	2.
Chain of Custody Relinquished?	Zes	□No	N/A	3.
Sampler Name and/or Signature on COC?	Yes_		□N/A	4.
Samples Arrived within Hold Time?	ZYes			5.
Short Hold Time Analysis (<72 hr)?	□Yes	Zívo		6.
Rush Turn Around Time Requested?	□Yeş	ZNo		
Sufficient Volume?	Yes			7.
Correct Containers Used?		No		8.
-Pace Containers Used?	ØYes —∕	. □No	□N/A	9.
Containers Intact?	Yes	□No	□N/A	4.0
iltered Volume Received for Dissolved Tests?	Ves	No	N/A	10.
	□Yes	□No	N/A	11. Note if sediment is visible in the dissolved container
-Includes Date/Time/ID/Analysis Matrix: WT	Yes	□No	□N/A	12.
All containers needing acid/base preservation have been thecked? All containers needing preservation are found to be in compliance with EPA recommendation?	∐Yes	□No	EN/A	13.
HNO3, H2SO4, HCI<2; NaOH >9 Sulfide, NaOH>12 Cyanide) xceptions: VOA, Coliform, TOC, Oil and Grease	□Yes	□No	N/A	Initial when Jot # of added
RO/8015 (water) DOC	Yes	No	DN/A	Initial when Lot # of added completed: preservative:
eadspace in VOA Vials (>6mm)? ip Blank Present?	Yes	□No	DMA	14,
ip Blank Custody Seals Present?	☐Yes	□No	ZN/A	15.
See Trip Blank Lot # (if purchased):	☐Yes	□No	DN/A	4
CLIENT NOTIFICATION/RESOLUTION Prson Contacted;				Field Data Required? Yes No
omments/Resolution:		1		
Project Manager Review:		1/		



Tel: 612-607-1700 Fax: 612- 607-6444

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID CLab Sample ID 6
Filename LInjected By STotal Amount Extracted 9

OUTFALL 001 60216780001 U160504A_10 SMT

% Moisture
Dry Weight Extracted
ICAL ID

CCal Filename(s)

Method Blank ID

938 mL NA NA U160204 U160504A_03 BLANK-50022 Matrix Water
Dilution NA
Collected 04/11/

Received

Extracted

Analyzed

04/11/2016 10:40 04/13/2016 09:40 04/27/2016 14:00 05/04/2016 14:30

ng's Percent **EMPC** RL Internal Conc **Native** Added Recovery **Standards** pg/L pg/L pg/L Isomers 2,3,7,8-TCDD-13C 2.00 4.4 2.3.7.8-TCDD ND 85 4.4 1,2,3,7,8-PeCDD-13C 2.00 ND Total TCDD 70 2.00 1,2,3,4,7,8-HxCDD-13C 67 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C 2.00 44 ND 1,2,3,7,8-PeCDD 2.00 66 4.4 ND Total PeCDD OCDD-13C 4.00 66 4.4 J 1,2,3,4,7,8-HxCDD 6.9 2.00 1,2,3,4-TCDD-13C NA 1,2,3,6,7,8-HxCDD 13.0 4.4 J Ĵ 1,2,3,7,8,9-HxCDD-13C 2.00 NA 4.4 1,2,3,7,8,9-HxCDD 11.0 110.0 4.4 Total HxCDD 0.20 101 2,3,7,8-TCDD-37Cl4 4.4 430.0 1,2,3,4,6,7,8-HpCDD Total HpCDD 850.0 4.4 4900.0 4.4 OCDD

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected NA = Not Applicable NC = Not Calculated

J = Estimated value

A = Reporting Limit based on signal to noise

P = PCDE Interference

I = Interference present



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID OUTFALL 002
Lab Sample ID 60216780002
Filename U160504A_11
Injected By SMT
Total Amount Extracted 949 mL
% Moisture NA

Dry Weight Extracted NA ICAL ID U160204

CCal Filename(s) U160504A_03
Method Blank ID BLANK-50022

Matrix Water Dilution NA

Collected 04/11/2016 11:24 Received 04/13/2016 09:40 Extracted 04/27/2016 14:00 Analyzed 05/04/2016 15:16

				,		
Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	85 87 70
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,4,7,6-13CDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 2.00 4.00	66 65 65
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 13.0	=	4.4 4.4 4.4 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	110.0 260.0		4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	101
OCDD	1500.0		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

J = Estimated value



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Blank Analysis Results

Lab Sample ID Filename Total Amount Extracted

Total Amount Extracted ICAL ID CCal Filename(s)

BLANK-50022 U160501B_05 1030 mL U160204 U160501A_17 Matrix Dilution Extracted

Water NA

Extracted
Analyzed

04/27/2016 14:00 05/02/2016 03:42

Injected By BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	53 83 85
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	72 92 75
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	ND ND ND		4.4 4.4 4.4	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND ND		4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	53
OCDD	ND		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Laboratory Control Spike Results

Lab Sample ID Filename **Total Amount Extracted ICAL ID**

981 mL U160204 CCal Filename U160501A 17 Method Blank ID BLANK-50022

LCS-50023 U160501B 01 Matrix Dilution

Extracted Analyzed Injected By Water NA

04/27/2016 14:00 05/02/2016 00:35 BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDD	10	8.6	6.7	15.8	86	
1,2,3,7,8-PeCDD	50	45	35.0	71.0	91	
1,2,3,4,7,8-HxCDD	50	53	35.0	82.0	106	
1,2,3,6,7,8-HxCDD	50	55	38.0	67.0	109	
1,2,3,7,8,9-HxCDD	50	59	32.0	81.0	118	
1,2,3,4,6,7,8-HpCDD	50	51	35.0	70.0	102	
OCDD	100	110	78.0	144.0	113	
2,3,7,8-TCDD-37Cl4	10	4.6	3.1	19.1	46	
2,3,7,8-TCDD-13C	100	47	20.0	175.0	47	
1,2,3,7,8-PeCDD-13C	100	82	21.0	227.0	82	
1,2,3,4,7,8-HxCDD-13C	100	89	21.0	193.0	89	
1,2,3,6,7,8-HxCDD-13C	100	78	25.0	163.0	78	
1,2,3,4,6,7,8-HpCDD-13C	100	100	26.0	166.0	104	
OCDD-13C	200	170	26.0	397.0	84	

Cs = Concentration Spiked (ng/mL)

Cr = Concentration Recovered (ng/mL)

Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

* = See Discussion



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample İD Filename

Total Amount Extracted ICAL ID

CCal Filename(s) Method Blank ID

OUTFALL 001-MS 60216780001-MS U160504A_04

955 mL

U160204 U160504A_03 **BLANK-50022** Matrix

Dilution Extracted Analyzed

Injected By

Water NA

04/27/2016 14:00 05/04/2016 09:50 SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.19	93	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	49 70 68
1,2,3,7,8-PeCDD Total PeCDD	1.00	1.00	100	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	63 62 59
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.13 1.21 1.31	113 121 131	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.46	146	2,3,7,8-TCDD-37Cl4	0.20	49
OCDD	2.00	7.11	355			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename OUTFALL 001-MSD 60216780001-MSD

Total Amount Extracted

U160504A_05 979 mL Matrix Water Dilution NA

ICAL ID
CCal Filename(s)
Method Blank ID

U160204 U160504A_03 BLANK-50022 Dilution Extracted Analyzed

04/27/2016 14:00 05/04/2016 10:35

Injected By SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.18	88	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	27 43
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.98	98	1,2,3,4,7,8-HXCDD-13C 1,2,3,4,6,7,8-HpCDD-13C 0CDD-13C	2.00	42 37 37 37
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.07 1.25 1.22	107 125 122	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA :
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.75	175	2,3,7,8-TCDD-37Cl4	0.20	54
OCDD	2.00	10.51	526			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

Tel: 612-607-1700 Fax: 612-607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID

OUTFALL 001 60216780001 60216780001-MS 60216780001-MSD

Sample Filename MS Filename MSD Filename

U160504A_10 U160504A_04 U160504A_05

Dry Weights Sample Amount MS Amount MSD Amount

NA NA NA

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Backgro	und Subtracted	
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDD	0.000	0.20	0.19	0.18	5.1	93	88	5.1
1,2,3,7,8-PeCDD	0.000	1.00	1.00	0.98	1.8	100	98	1.8
1,2,3,4,7,8-HxCDD	6.915	1.00	1.13	1.07	4.9	112	107	5.0
1,2,3,6,7,8-HxCDD	12.699	1.00	1.21	1.25	2.9	120	124	2.9
1,2,3,7,8,9-HxCDD	10.991	1.00	1.31	1.22	7.0	129	121	7.1
1,2,3,4,6,7,8-HpCDD	426.074	1.00	1.46	1.75	18.3	105	133	23.8
OCDD	4869.218	2.00	7.11	10.51	38.6	123	287	80.1

Definitions

MS = Matrix Spike MSD = Matrix Spike Duplicate Qm = Quantity Measured Qs = Quantity Spiked % Rec. = Percent Recovery RPD = Relative Percent Difference

NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan

T = Tetra Pe = Penta Hx = Hexa Hp = Hepta O = Octa





June 09, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60219255

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Study Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60219255

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587





SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60219255

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60219255001	OUTFALL 001	Water	05/16/16 11:45	05/17/16 06:45
60219255002	OUTFALL 002	Water	05/16/16 12:45	05/17/16 06:45



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.:

60219255

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60219255001	OUTFALL 001	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	JMT, NAW	3	PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K
60219255002	OUTFALL 002	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	JMT, NAW	3	PASI-K
		EPA 1664A	LDB	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K



Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

EPA 6010 Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method: EPA 625 Description: 625 MSSV

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

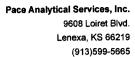
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

SM 2540F

Description: 2540F Total Settleable Solids Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60219255

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

June 09, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60219255

Date: 06/09/2016 02:03 PM

Sample: OUTFALL 001	Lab ID:	60219255001	Collected	1: 05/16/16	3 11:45	Received: 05/17/16 06:45 Matrix: Water							
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual				
6010 MET ICP	Analytical	Method: EPA 6											
Zinc, Total Recoverable	0.17	mg/L	0.050	0.0071	1	05/17/16 16:25	05/18/16 15:01	7440-66-6					
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepai	ration Meth	od: EPA	3010							
Zinc, Dissolved	0.019J	mg/L	0.050	0.0071	1	05/18/16 15:00	05/19/16 14:57	7440-66-6					
625 MSSV	Analytical	Method: EPA 6	325 Prepara	ition Metho	d: EPA 6	625							
Acenaphthene	ND	ug/L	11.1	2.8	1	05/20/16 00:00	05/23/16 19:25	83-32-9					
Indeno(1,2,3-cd)pyrene	ND	ug/L	11.1	2.8	1	05/20/16 00:00	05/23/16 19:25	193-39-5					
Pentachlorophenol	ND	ug/L	11.1	2.8	1	05/20/16 00:00	05/23/16 19:25	87-86-5					
Phenanthrene	ND	ug/L	11.1	2.8	1		05/23/16 19:25						
Pyrene	ND	ug/L	11.1	2.8	1	05/20/16 00:00	05/23/16 19:25	129-00-0					
Surrogates													
Nitrobenzene-d5 (S)	74	%	33-120		1	05/20/16 00:00							
2-Fluorobiphenyl (S)	67	%	39-120		1	05/20/16 00:00							
Terphenyl-d14 (S)	78	%	45-120		1		05/23/16 19:25						
Phenol-d6 (S)	20	%	11-120		1		05/23/16 19:25						
2-Fluorophenol (S)	33	%	17-120		1	05/20/16 00:00							
2,4,6-Tribromophenol (S)	83	%	39-120		1	05/20/16 00:00	05/23/16 19:25	118-79-6					
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	3270 by SIM	Preparation	on Meth	od: EPA 3510							
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.11	0.045	1	05/20/16 00:00	05/24/16 21:17	53-70-3					
2-Fluorobiphenyl (S)	67	%	21-117		1	05/20/16 00:00	05/23/16 19:25	321-60-8					
Terphenyl-d14 (S)	78	%	21-131		1	05/20/16 00:00	05/23/16 19:25	1718-51-0					
HEM, Oil and Grease	Analytical	Method: EPA	1664A										
Oil and Grease	ND	mg/L	5.0	5.0	1		06/02/16 15:29						
2540F Total Settleable Solids	Analytical	Method: SM 2	540F										
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		05/17/16 11:30						
Phenolics, Total Recoverable	Analytical	Method: EPA	\$20.1										
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		05/18/16 16:29						



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.:

Date: 06/09/2016 02:03 PM

60219255

Sample: OUTFALL 002	Lab ID:	60219255002	Collected	d: 05/16/1	6 12:45	Received: 05/	/17/16 06:45 Ma	atrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual			
6010 MET ICP	Analytical	Method: EPA 6	010 Prepa	ration Meth	od: EPA	3010						
Zinc, Total Recoverable	0.056	mg/L	0.050	0.0071	1	05/17/16 16:25	05/18/16 16:35	7440-66-6				
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepa	ration Meth	od: EPA	3010						
Zinc, Dissolved	0.032J	mg/L	0.050	0.0071	1	05/18/16 15:00	05/19/16 15:08	7440-66-6				
625 MSSV	Analytical	Analytical Method: EPA 625 Preparation Method: EPA 625										
Acenaphthene	ND	ug/L	10.0	2.5	1	05/20/16 00:00						
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	2.5	1	05/20/16 00:00	05/24/16 02:29	193-39-5				
Pentachlorophenol	ND	ug/L	10.0	2.5	1	05/20/16 00:00	05/24/16 02:29	87-86-5				
Phenanthrene	ND	ug/L	10.0	2.5	1	05/20/16 00:00	05/24/16 02:29	85-01-8				
Pyrene	ND	ug/L	10.0	2.5	1	05/20/16 00:00	05/24/16 02:29	129-00-0				
Surrogates												
Nitrobenzene-d5 (S)	67	%	33-120		1	05/20/16 00:00	05/24/16 02:29	4165-60-0				
2-Fluorobiphenyl (S)	59	%	39-120		1	05/20/16 00:00	05/24/16 02:29	321-60-8				
Terphenyl-d14 (S)	77	%	45-120		1	05/20/16 00:00	05/24/16 02:29	1718-51-0				
Phenol-d6 (S)	20	%	11-120		1	05/20/16 00:00	05/24/16 02:29	13127-88-3				
2-Fluorophenol (S)	33	%	17-120		1	05/20/16 00:00	05/24/16 02:29	367-12-4				
2,4,6-Tribromophenol (S)	89	%	39-120		1	05/20/16 00:00	05/24/16 02:29	118-79-6				
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparation	on Meth	od: EPA 3510						
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.040	1	05/20/16 00:00	05/24/16 21:36	53-70-3				
2-Fluorobiphenyl (S)	59	%	21-117		1	05/20/16 00:00	05/24/16 02:29	321-60-8				
Terphenyl-d14 (S)	77	%	21-131		1	05/20/16 00:00	05/24/16 02:29	1718-51-0				
HEM, Oil and Grease	Analytical	Method: EPA 1	664A									
Oil and Grease	ND	mg/L	5.0	5.0	1		06/02/16 15:29					
2540F Total Settleable Solids	Analytical	Method: SM 25	540F									
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		05/17/16 11:30					
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		05/18/16 16:30					

REPORT OF LABORATORY ANALYSIS



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

MPRP/35953

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

ND

Matrix: Water

6010 MET

Associated Lab Samples:

Associated Lab Samples:

60219255001, 60219255002

METHOD BLANK: 1760179

Units

mg/L

Units

Parameter

Parameter

60219255001, 60219255002

Blank Result Reporting Limit

0.050

MDL Analyzed

0.0071

Qualifiers

Zinc

LABORATORY CONTROL SAMPLE:

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc

mg/L

1760180

1.0

101

80-120

101

05/18/16 14:47

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

MSD

1760182 MS

1.1

MSD

MSD MS % Rec % Rec % Rec

Max RPD RPD

Qual

Date: 06/09/2016 02:03 PM

Zinc

60219255001 Parameter Units

mg/L

Result

Spike Conc. 0.17 1

MS

Spike Conc. Result

Result 1.2

98

Limits 75-125

3 20



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

MPRP/35968

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

Matrix: Water

6010 MET Dissolved

Associated Lab Samples:

60219255001, 60219255002

METHOD BLANK: 1760898

Associated Lab Samples:

60219255001, 60219255002

Blank

Reporting

Parameter

Units

Result

Limit

MDL Analyzed Qualifiers

Zinc, Dissolved

mg/L

ND

0.050

0.0071 05/19/16 12:50

LABORATORY CONTROL SAMPLE:

Parameter

1760899

Spike Conc.

MS

Spike

Conc.

1

1

LCS Result

LCS % Rec

MSD

Result

MSD

Result

0.98

% Rec Limits

Zinc, Dissolved

Zinc, Dissolved

Units mg/L

60218590007

Result

Result

0.019J

Units

mg/L

Units

mg/L

1.0

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1760900

MSD

1760901

MS

Result

103

MSD

% Rec

102

96

% Rec

Max RPD RPD

20

Qual

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

Parameter

1760902

ND

1

Spike

Conc.

MSD

1760903

1.0

Limits

75-125

Parameter

Zinc, Dissolved

MS 60219255001 Spike

Conc.

Spike Conc.

MS Result

0.98

1.0

MS % Rec

MS

% Rec

102

97

MSD % Rec % Rec Limits

Max RPD RPD

Qual 75-125 20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc..



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

OEXT/54355

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples:

60219255001, 60219255002

METHOD BLANK: 1762335

Associated Lab Samples: 60219255001, 60219255002

Matrix: Water

Doromotos	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Parameter	Units					
Acenaphthene	ug/L	ND	10.0	2.5	05/23/16 18:43	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	05/23/16 18:43	
Pentachlorophenol	ug/L	ND	10.0	2.5	05/23/16 18:43	
Phenanthrene	ug/L	ND	10.0	2.5	05/23/16 18:43	
Pyrene	ug/L	ND	10.0	2.5	05/23/16 18:43	
2.4.6-Tribromophenol (S)	%	79	39-120		05/23/16 18:43	
2-Fluorobiphenyl (S)	%	72	39-120		05/23/16 18:43	
2-Fluorophenol (S)	%	35	17-120		05/23/16 18:43	
Nitrobenzene-d5 (S)	%	76	33-120		05/23/16 18:43	
Phenol-d6 (S)	%	21	11-120		05/23/16 18:43	
Terphenyl-d14 (S)	%	79	45-120		05/23/16 18:43	

ABORATORY CONTROL SAMPLE:	1762336	Spike	LCS	LCS	% Rec			
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers		
Acenaphthene	ug/L	50	41.0	82	51-120			
deno(1,2,3-cd)pyrene	ug/L	50	42.1	84	52-120			
ntachlorophenol	ug/L	50	45.7	91	47-120			
enanthrene	ug/L	50	41.4	83	54-120			
rene	ug/L	50	42.6	85	56-115			
3-Tribromophenol (S)	%			95	39-120			
uorobiphenyl (S)	%			81	39-120			
uorophenol (S)	%			37	17-120			
obenzene-d5 (S)	%			82	33-120			
nol-d6 (S)	%			22	11-120			
phenyl-d14 (S)	%			86	45-120			

MATRIX SPIKE SAMPLE:	1762337	60219255001	Spike	MS	MS	% Rec		
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers	
Acenaphthene	ug/L	ND	50	38.1	76	48-120		
Indeno(1,2,3-cd)pyrene	ug/L	ND	50	41.0	82	50-120		
Pentachlorophenol	ug/L	ND	50	59.2	118	43-135		
Phenanthrene	ug/L	ND	50	40.5	81	54-120		
Pvrene	ug/L	ND	50	42.3	85	53-115		
2,4,6-Tribromophenol (S)	%				104	39-120		
2-Fluorobiphenyl (S)	%				75	39-120		
2-Fluorophenol (S)	%				33	17-120		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS



Project:

SW Monthly 001/002

Pace Project No.: 60219255

Date: 06/09/2016 02:03 PM

MATRIX SPIKE SAMPLE:	1762337						
		60219255001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)	<u></u> %				84	33-120	
Phenol-d6 (S)	%				20	11-120	
Terphenyl-d14 (S)	%				84	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

OEXT/54368

Analysis Method:

Matrix: Water

EPA 8270 by SIM

QC Batch Method: EPA 3510 Analysis Description:

8270 Water PAH by SIM MSSV

Associated Lab Samples:

60219255001, 60219255002

METHOD BLANK: 1763007 Associated Lab Samples:

Dibenz(a,h)anthracene

Date: 06/09/2016 02:03 PM

2-Fluorobiphenyl (S)

Terphenyl-d14 (S)

Parameter

60219255001, 60219255002

Units

ug/L %

%

Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
ND	0.10	0.040	05/24/16 20:22	
72	21-117		05/23/16 18:43	
79	21-131		05/23/16 18:43	

LABORATORY CONTROL SAMPLE:	1763008	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L		0.89	89	37-122	
2-Fluorobiphenyl (S)	%			76	21-117	
Terphenyl-d14 (S)	%			90	21-131	

MATRIX SPIKE SAMPLE:	1763009	60219255001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L	ND	1	0.82	82	14-140	
2-Fluorobiphenyl (S)	%				81	21-117	
Terphenyl-d14 (S)	%				91	21-131	



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

WET/62189

Analysis Method:

EPA 1664A

QC Batch Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

METHOD BLANK: 1769736

60219255001, 60219255002

Matrix: Water

ND

Associated Lab Samples:

60219255001, 60219255002

Blank

Reporting

Parameter

Units

mg/L

Result

Limit

MDL

5.0

Analyzed 06/02/16 15:27 Qualifiers

LABORATORY CONTROL SAMPLE:

Parameter

1769737

Spike Conc.

LCS Result

8.0

LCS % Rec % Rec Limits

5.0

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

Units

mg/L

40

41.8

104

78-114

Qualifiers

MATRIX SPIKE SAMPLE:

1769738

60220020002 Result

Spike Conc.

40.4

MS Result

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1769739

Parameter

Parameter

Units

60219255001 Result

Dup Result

RPD

44.9

Max RPD

Qualifiers

78-114

Oil and Grease

mg/L

ND

ND

18

91



Project:

SW Monthly 001/002

Pace Project No.:

60219255

QC Batch:

WETA/39539

Analysis Method:

EPA 420.1

QC Batch Method:

EPA 420.1

Analysis Description:

420.1 Phenolics Macro

Associated Lab Samples:

60219255001, 60219255002

METHOD BLANK: 1760598

Matrix: Water

Associated Lab Samples:

60219255001, 60219255002

Blank

Reporting

Parameter

Units

Result

Limit

MDL Analyzed Qualifiers

Phenolics, Total Recoverable

mg/L

ND

0.050

05/18/16 16:28 0.011

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

1760599

Spike

LCS Result

LCS % Rec % Rec Limits

Phenolics, Total Recoverable

mg/L

Units

Units

mg/L

mg/L

Conc. .5

Result

0.51

103

Qualifiers

MATRIX SPIKE SAMPLE:

1760600

60219255001

Spike Conc.

ND

ND

MS Result

MS % Rec

90-110

% Rec Limits

Qualifiers

Phenolics, Total Recoverable

Phenolics, Total Recoverable

Date: 06/09/2016 02:03 PM

SAMPLE DUPLICATE: 1760601

Units

60219357001 Result

Dup Result

.5

ND

RPD

0.53

Max RPD

106

20

Qualifiers

90-110





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60219255

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

Date: 06/09/2016 02:03 PM

PASI-K Pace Analytical Services - Kansas City



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.: 6

Date: 06/09/2016 02:03 PM

60219255

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60219255001	OUTFALL 001	EPA 3010	MPRP/35953	EPA 6010	ICP/26251
60219255002	OUTFALL 002	EPA 3010	MPRP/35953	EPA 6010	ICP/26251
60219255001	OUTFALL 001	EPA 3010	MPRP/35968	EPA 6010	ICP/26261
60219255002	OUTFALL 002	EPA 3010	MPRP/35968	EPA 6010	ICP/26261
60219255001	OUTFALL 001	EPA 625	OEXT/54355	EPA 625	MSSV/17687
60219255002	OUTFALL 002	EPA 625	OEXT/54355	EPA 625	MSSV/17687
60219255001	OUTFALL 001	EPA 3510	OEXT/54368	EPA 8270 by SIM	MSSV/17696
60219255002	OUTFALL 002	EPA 3510	OEXT/54368	EPA 8270 by SIM	MSSV/17696
60219255001	OUTFALL 001	EPA 1664A	WET/62189		
60219255002	OUTFALL 002	EPA 1664A	WET/62189		
60219255001	OUTFALL 001	SM 2540F	WET/61846		
60219255002	OUTFALL 002	SM 2540F	WET/61846		
60219255001	OUTFALL 001	EPA 420.1	WETA/39539		
60219255002	OUTFALL 002	EPA 420.1	WETA/39539		



Sample Condition Upon Receipt

WO#:60219255

Earth con - 1 p		
Client Name: (Prems)		
Courier: FedEx UPS UPS VIA Clay	PEX ECI Pace	Optional Optional
Tracking #: 8093 90/1 6854	Pace Shipping Label Used? Yes	Other Client Proj Due Date:
Custody Seal on Cooler/Box Present: Yes	No. 77	□ No/ū Proj Name:
	Page of	
Thermometer Used: CF 1.0 (FF)	_ / _ > \	Outof Ed
Cooler Temperature: 19/2.3/2-0	(circle one)	Samples received on ice, cooling process has begun,
Temperature should be above freezing to 6°C		Date and initials of person examining contents:
Chain of Custody present:	ZYes □No □N/A 1.	
Chain of Custody filled out:	Yes Ono On/A 2	
Chain of Custody relinquished:	QYes □No □N/A 3	
Sampler name & signature on COC:	Ayes Ono On/A 4.	
Samples arrived within holding time:	AYes ONO ON/A 5.	
Short Hold Time analyses (<72hr);	Ziyes DNo DN/A 6.5-5	
Rush Turn Around Time requested:	DYes Zino Dinia 7	
Sufficient volume:	NYes DNo DN/A 8	
Correct containers used:	Zives DNo DNA	The second secon
Pace containers used:		
Containers intact:	74. 2. 5.	
Unpreserved 5035A soils frozen w/in 48hrs?		
Filtered volume received for dissolved tests?		
Sample labels match COC:	Yes Ono On/A	
Includes date/time/ID/analyses Matrix:	Court I	The state of the s
All containers needing preservation have been checked.		
All containers needing preservation are found to have complete		
Similar Viacoulusingstion.	Pres Lino UN/A 14.	
Exceptions: VOA, Coliform, & WI-DRO (water) Trip Blank present:	Yes No completed	Lot # of added preservative
	□Yes □No ØN/A	
Pace Trip Blank lot # (if purchased): Headspace in VOA vials (>6mm):	15.	
viala (>onin),	□Yes □No ZIN/A	
		The state of the s
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑NA 17. List State:	
Additional labels attached to 5035A vials in the field?	☐Yes ☐Na ØN/A 18.	
NI		Pata Required? Y / N
Person Contacted:	Date/Time:	and rodation: 1 1 ld
Comments/ Resolution:	The state of the s	
•		
troing t Manager Paul		
roject Manager Review:	Date: 5.17.	16



CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Compan		te Services Inc	Report To:	Sher	ri Ha	rvey			. """		_	ention:		Shen	i Har	vey		************	-	······································		ľ				L	1770					;:	
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	Marietta GA	30062	W .	Aliso	n Le	vinson (alevinso	on@earth	on.com)		ress:	·		10000				7, 0,00	-													4
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	SAMPL	DRINKING WATER WATER WASTE WATER PRODUCT SOLUSCIED OIL WIPE	WT. WW P St. OL. WP	(see valid codes to left)	(G=GRAB C=COMP)	COMPA STAI		COMPI END/0	DEITE BARB	COLLECTION	35											(according)	minacon in		Venez			(V/N)					
ITEM#	(A-Z, 0-9 Sample IDs MUST		AR OT TS	CODE	SAMPLE TYPE (DATE	TIME	DATE,	TIME	SAMPLE TEMP AT	# OF CONTAINERS	Unpreserved	H ₂ SO ₄	F F	NaOH	Na ₂ S ₂ O ₃ Methanol	Other	Analysis Test	D&G Phenois	ettleable Scilds	Total Recoverable Zinc	225 BNA*	613 Dioxin**	Dissolved Zinc				Residual Chlorine (Y/N)	6	72-19			
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Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607,1700

Fax: 612.607.6444

Report Prepared for:

Trudy Gipson PACE Kansas 9608 Loiret Blvd Lenexa KS 66219

> REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10348928

Sample Receipt Date: 05/18/2016

Client Project #: 60219255

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

June 08, 2016

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Report Prepared Date:

June 8, 2016



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414

Phone: 612.607.1700 Fax: 612.607.6444

<u>DISCUSSION</u>

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. Per request, the reporting limits were set to 4.4 pg/L.

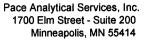
The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 74-102%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean water or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 70-117% with relative percent differences of 0.4-10.1%. The background-subtracted recovery values obtained for OCDD in the matrix spike analyses were below the target range, possibly due to variability between the sample aliquots.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
lowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

Chain of Custody



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	1	OUTFALL 001	RQS	5/16/2016 11:45	60219255001	Water	4					x		<u> </u>						$\neg \vdash$	00	1
	2	OUTFALL 002	PS	5/16/2016 12:45	60219255002	Water	2					x									Ot	2
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^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name: Sample Condition Upon Receipt Form

| Document No.: | Is | F-MN-L-213-rev.16 | Pace Mi

Document Revised: 04Apr2016 Page 1 of 1

Issuing Authority: Pace Minnesota Quality Office

Sample Condition Client Name: Upon Receipt			Project	*: WO#:10348928
Pace-ks		·.	,	MYII
Courier: Fed Ex UPS	USPS		lient	
Commercial Pace SpeeDee	Other:			10348928
Tracking Number: 6703 1643 126	. (
Custody Seal on Cooler/Box Present?	0	Seals Int	act? 🎉	Yes No Optional: Proj. Due Date: Proj. Name:
Packing Material: Debubble Wrap Debubble Bags	Non	ie 🔲	Other:	Temp Blank? 💆 Yes 🔲 No
Thermometer 151401163		e of Ice:	(ADVe	et Blue None Samples on ice, cooling process has begu
Cooler Temp Read (°C): 2.3 Cooler Temp Co	rrected (°C)։ ጊን	>	Biological Tissue Frozen? Yes No N/A
Temp should be above freezing to 6°C Correction Fac	tor: O	. 5	Dat	te and initials of Person Examining Contents:
JSDA Regulated Soil (\times\D)/A, water sample) Did samples originate in a quarantine zone within the United	Staton Al	AB A7 C/	N EL GA	ID IA Did number sylvingto from a family source (interpreting)
VIS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?	States: AL,	AR, AZ, C	Yes	ID, LA. Did samples originate from a foreign source (internationally, No Including Hawaii and Puerto Rico)?
	gulated Soi	l Checklis	st (F-MN-	Q-338) and include with SCUR/COC paperwork.
				COMMENTS:
Chain of Custody Present?	₩Ves	□No	□N/A	1.
Chain of Custody Filled Out?	Yes	□No	□N/A	2.
Chain of Custody Relinquished?	Yes	□No	□N/A	3.
Sampler Name and/or Signature on COC?	□Yes	ØNo	□N/A	4.
Samples Arrived within Hold Time?	Ø∰Yes	□No	N/a	5.
Short Hold Time Analysis (<72 hr)?	∐Yes	≱ No	□N/A	6.
Rush Turn Around Time Requested?	∐Yes	₩No	□n/A	7.
Sufficient Volume?	₩es	□No	□n/a	8.
Correct Containers Used?	₩Yes		□N/A	9.
-Pace Containers Used?	⊒a¥es	□No	□N/A	
Containers Intact?	¥€Yes	□No	□N/A	10.
Filtered Volume Received for Dissolved Tests?	∐Yes	□No	Ū 2 N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	Pyes	□No	□n/a	12.
-Includes Date/Time/ID/Analysis Matrix:			-	
All containers needing acid/base preservation have been				13. □HNO₃ □H₂SO₄ □NaOH □HC!
checked?	□Yes	∏No	[SRI∕A	
All containers needing preservation are found to be in compliance with EPA recommendation?			•	Sample #
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	∐Yes	□Na	N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	Yes	ØNo	` □n/a	Initial when Lot # of added completed: preservative:
Headspace in VOA Vials (>6mm)?	□Yes	No	ZAN/A	14.
Trip Blank Present?	Yes	□ио	<u>₩</u> N/A	15.
Trip Blank Custody Seals Present?	Yes	□No	¥21√A ¥21√A	
Pace Trip Blank Lot # (if purchased):		·-	T-""	
CLIENT NOTIFICATION/RESOLUTION		······································		Field Data Required? Yes No
Person Contacted:				Data /Time:
Comments/Resolution:				Date/ Finie:
				,
	•			
		Thum		Date: 05/18/16



Tel: 612-607-1700 Fax: 612- 607-6444

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID
Lab Sample ID
Filename
U160603A_08
Injected By
Total Amount Extracted
% Moisture
Dry Weight Extracted
UTFALL 001
60219255001
U160603A_08
BAL
950 mL
NA

Dry Weight Extracted NA ICAL ID U160204

CCal Filename(s) U160603A_02
Method Blank ID BLANK-50515

Matrix Water Dilution NA

Collected 05/16/2016 11:45 Received 05/18/2016 09:45 Extracted 06/01/2016 11:40 Analyzed 06/03/2016 21:46

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	100 98 91
1,2,3,7,8-PeCDD Total PeCDD	ND 11.0		4.4 4.4 J	1,2,3,4,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C 0CDD-13C	2.00 2.00 2.00 4.00	74 91 92
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	11.0 25.0 21.0		4.4 J 4.4 J 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	190.0 890.0 1700.0		4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	83
OCDD	10000.0		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

J = Estimated value A = Reporting Limit based on signal to noise

P = PCDE Interference

I = Interference present



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By

OUTFALL 002 60219255002 U160603A_09 BAL

Total Amount Extracted % Moisture Dry Weight Extracted **ICAL ID**

CCal Filename(s)

Method Blank ID

969 mL NA NA U160204 U160603A 02 **BLANK-50515** Matrix Dilution

Water NA

Collected Received **Extracted** Analyzed 06/03/2016 22:31

05/16/2016 12:45 05/18/2016 09:45 06/01/2016 11:40

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	ND		4.4	2,3,7,8-TCDD-13C	2.00	102
Total TCDD	ND		4.4	1,2,3,7,8-PeCDD-13C	2.00	101
				1,2,3,4,7,8-HxCDD-13C	2.00	88
1,2,3,7,8-PeCDD	ND		4.4	1,2,3,6,7,8-HxCDD-13C	2.00	81
Total PeCDD	ND		4.4	1,2,3,4,6,7,8-HpCDD-13C	2.00	89
10001 0000				OCDD-13C	4.00	90
1,2,3,4,7,8-HxCDD	ND		4.4			
1,2,3,6,7,8-HxCDD	ND		4.4	1,2,3,4-TCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD	ND		4.4	1,2,3,7,8,9-HxCDD-13C	2.00	NA
Total HxCDD	ND		4.4	1,-,-,-,-		
TOTALLINODD	110		•••	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,4,6,7,8-HpCDD	92	****	4.4	2,0,7,0 1000		
Total HpCDD	200		4.4			
Total TipODD	200					
OCDD	1200		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected NA = Not Applicable NC = Not Calculated

J = Estimated value I = Interference present

Page 10 of 15



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Blank Analysis Results

Lab Sample ID Filename Total Amount Extracted

Total Amount Extracted ICAL ID

CCal Filename(s)

BLANK-50515 F160604B_07 987 mL

F160602 F160604B_01 Matrix Dilution Water NA

Extracted Analyzed 06/01/2016 11:40 06/04/2016 15:33

Injected By BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	93 96 82
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	71 95 75
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND		4.4 4.4 4.4	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND ND		4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	89
OCDD	ND		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Laboratory Control Spike Results

Lab Sample ID
Filename
Total Amount Extracted
ICAL ID
CCal Filename
Method Blank ID

LCS-50516 F160604B_05 983 mL F160602 F160604B_01 BLANK-50515

Matrix Dilution Extracted

Water NA

Extracted
Analyzed

06/01/2016 11:40 06/04/2016 14:04

Injected By BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDD	10	8.2	6.7	15.8	82
1,2,3,7,8-PeCDD	50	47	35.0	71.0	94
1,2,3,4,7,8-HxCDD	50	51	35.0	82.0	102
1,2,3,6,7,8-HxCDD	50	59	38.0	67.0	117
1,2,3,7,8,9-HxCDD	50	56	32.0	81.0	113
1,2,3,4,6,7,8-HpCDD	50	50	35.0	70.0	99
OCDD	50	110	78.0	144.0	112
2,3,7,8-TCDD-37Cl4	10	8.9	3.1	19.1	89
2,3,7,8-TCDD-13C	100	94	20.0	175.0	94
1,2,3,7,8-PeCDD-13C	100	110	21.0	227.0	110
1,2,3,4,7,8-HxCDD-13C	100	82	21.0	193.0	82
1,2,3,6,7,8-HxCDD-13C	100	66	25.0	163.0	66
1,2,3,4,6,7,8-HpCDD-13C	100	85	26.0	166.0	85
OCDD-13C	200	140	26.0	397.0	72

Cs = Concentration Spiked (ng/mL)

REPORT OF LABORATORY ANALYSIS

Cr = Concentration Recovered (ng/mL)

Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

^{* =} See Discussion



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID

Filename **Total Amount Extracted**

ICAL ID CCal Filename(s) Method Blank ID **OUTFALL 001-MS** 60219255001-MS

U160603A_05 974 mL

U160204 U160603A_02 BLANK-50515 Matrix

Dilution NA Extracted

Analyzed Injected By Water

06/01/2016 11:40 06/03/2016 19:30

BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.14	72	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	110 109 101
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.85	85	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C 0CDD-13C	2.00	84 101 103
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.01 1.04 1.07	101 104 107	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.80	180	2,3,7,8-TCDD-37CI4	0.20	99
OCDD	2.00	10.96	548			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Total Amount Extracted

ICAL ID CCal Filename(s) Method Blank ID

OUTFALL 001-MSD 60219255001-MSD U160603A_06

1230 mL U160204

U160603A 02 **BLANK-50515** Matrix

Dilution Extracted Analyzed

Water NA

06/01/2016 11:40 06/03/2016 20:15

Injected By **BAL**

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.14	70	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	114 113 103
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.86	86	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	84 105 107
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.02 1.08 1.08	102 108 108	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.89	189	2,3,7,8-TCDD-37Cl4	0.20	97
OCDD	2.00	12.12	606			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID OUTFALL 001 60219255001 60219255001-MS 60219255001-MSD

Sample Filename MS Filename MSD Filename U160603A_08 U160603A_05 U160603A_06 Dry Weights
Sample Amount
MS Amount
MSD Amount

NA NA NA

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Background Subtracted				
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD		
2,3,7,8-TCDD	0.000	0.20	0.14	0.14	3.4	72	70	3.4		
1,2,3,7,8-PeCDD	0.000	1.00	0.85	0.86	0.6	85	86	0.6		
1,2,3,4,7,8-HxCDD	10.719	1.00	1.01	1.02	0.4	100	100	0.1		
1,2,3,6,7,8-HxCDD	24.612	1.00	1.04	1.08	4.1	101	105	3.6		
1,2,3,7,8,9-HxCDD	21.322	1.00	1.07	1.08	1.5	105	106	1.0		
1,2,3,4,6,7,8-HpCDD	886.979	1.00	1.80	1.89	5.0	94	80	15.6		
OCDD	10341.242	2.00	10.96	12.12	10.1	44	0	200.0		

Definitions

NC = Not Calculated

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable

CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan T = Tetra

T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa





July 11, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60222195

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60222195

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60222195

Lab ID	Sample ID	Matrix	Date Collected	Date Received	
60222195001	OUTFALL 001	Water	06/24/16 09:00	06/25/16 08:50	
60222195002	OUTFALL 002	Water	06/24/16 10:00	06/25/16 08:50	



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.:

60222195

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60222195001	OUTFALL 001	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	1	PASI-K
		EPA 625	NAW	11	PASI-K
		EPA 8270 by SIM	NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	RAB	1	PASI-K
		EPA 420.1	RAB	1	PASI-K
60222195002	OUTFALL 002	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	1	PASI-K
		EPA 625	NAW	11	PASI-K
		EPA 8270 by SIM	NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	RAB	1	PASI-K
		EPA 420.1	RAB	1	PASI-K





Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method: Description: 6010 MET ICP

EPA 6010

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method:

EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method: **Description: 625 MSSV**

EPA 625

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method:

EPA 1664A

Description: HEM, Oil and Grease

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WET/62833

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60222195001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MS (Lab ID: 1789713)

· Oil and Grease

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:





Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method:

SM 2540F

Description: 2540F Total Settleable Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

SW Monthly 001/002

Pace Project No.:

60222195

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

July 11, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.:

Date: 07/11/2016 03:58 PM

60222195

Sample: OUTFALL 001	Lab ID:	6022219500	1 Collected:	: 06/24/10	6 09:00	Received: 06/	25/16 08:50 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qua
S010 MET ICP			6010 Prepara	ation Meth	od: EPA	3010			
	•		•						
Zinc, Total Recoverable	0.16	mg/L	0.050	0.0071	1	07/06/16 16:40	07/08/16 15:33	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA	6010 Prepara	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.019J	mg/L	0.050	0.0071	1	07/06/16 16:40	07/08/16 11:44	7440-66-6	
625 MSSV	Analytical	Method: EPA	625 Preparat	ion Metho	d: EPA	625			
Acenaphthene	ND	ug/L	10.0	2.5	1	07/01/16 00:00	07/06/16 20:49	83-32-9	
ndeno(1,2,3-cd)pyrene	ND	ug/L	10.0	2.5	1	07/01/16 00:00	07/06/16 20:49	193-39-5	
Pentachlorophenol	ND	ug/L	10.0	2.5	1	07/01/16 00:00	07/06/16 20:49	87-86-5	
Phenanthrene	ND	ug/L	10.0	2.5	1	07/01/16 00:00	07/06/16 20:49	85-01-8	
Pyrene	ND	ug/L	10.0	2.5	1	07/01/16 00:00	07/06/16 20:49	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	69	%	33-120		1	07/01/16 00:00	07/06/16 20:49		
?-Fluorobiphenyl (S)	73	%	39-120		1	07/01/16 00:00	07/06/16 20:49		
[erphenyl-d14 (S)	78	%	45-120		1	07/01/16 00:00			
Phenol-d6 (S)	23	%	11-120		1	07/01/16 00:00			
2-Fluorophenol (S)	33	%	17-120		1	07/01/16 00:00	07/06/16 20:49		
2,4,6-Tribromophenol (S)	85	%	39-120		1	07/01/16 00:00	07/06/16 20:49	118-79-6	
3270 MSSV PAH by SIM	Analytical	Method: EPA	8270 by SIM	Preparation	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.040	1	07/01/16 00:00	07/06/16 16:59	53-70-3	
2-Fluorobiphenyl (S)	73	%	21-117		1	07/01/16 00:00	07/06/16 20:49	321-60-8	
Terphenyl-d14 (S)	78	%	21-131		1	07/01/16 00:00	07/06/16 20:49	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA	1664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		07/07/16 14:45		M1
2540F Total Settleable Solids	Analytical	Method: SM 2	2540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		06/25/16 12:10		
Phenolics, Total Recoverable	Analytical	Method: EPA	420.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		06/29/16 14:08		



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60222195

Date: 07/11/2016 03:58 PM

Sample: OUTFALL 002	Lab ID:	60222195002	Collected	1: 06/24/1	6 10:00	Received: 06/	25/16 08:50 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qua
6010 MET ICP	Analytical	Method: EPA 6	010 Prepar	ation Meth	od: EPA	3010			
Zinc, Total Recoverable	0.045J	mg/L	0.050	0.0071	1	07/06/16 16:40	07/08/16 15:43	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepar	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.035J	mg/L	0.050	0.0071	1	07/06/16 16:40	07/08/16 11:54	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	25 Prepara	tion Metho	d: EPA	625			
Acenaphthene	ND	ug/L	10.2	2.6	1	07/01/16 00:00	07/06/16 21:10	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.2	2.6	1	07/01/16 00:00			
Pentachlorophenol	ND	ug/L	10.2	2.6	1		07/06/16 21:10		
Phenanthrene	ND	ug/L	10.2	2.6	1	07/01/16 00:00	07/06/16 21:10	85-01-8	
Pyrene Surrogates	ND	ug/L	10.2	2.6	1	07/01/16 00:00	07/06/16 21:10	129-00-0	
Nitrobenzene-d5 (S)	81	%	33-120		1	07/01/16 00:00	07/06/16 21:10	4165-60-0	
2-Fluorobiphenyl (S)	80	%	39-120		1	07/01/16 00:00			
Terphenyl-d14 (S)	86	%	45-120		1		07/06/16 21:10		
Phenoi-d6 (S)	34	%	11-120		1	07/01/16 00:00	07/06/16 21:10	13127-88-3	
2-Fluorophenol (S)	48	%	17-120		1	07/01/16 00:00	07/06/16 21:10	367-12-4	
2,4,6-Tribromophenol (S)	94	%	39-120		1	07/01/16 00:00	07/06/16 21:10	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	07/01/16 00:00	07/06/16 17:54	53-70-3	
2-Fluorobiphenyl (S)	80	%	21-117		1	07/01/16 00:00	07/06/16 21:10	321-60-8	
Terphenyl-d14 (S)	86	%	21-131		1	07/01/16 00:00	07/06/16 21:10	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		07/07/16 14:46		
2540F Total Settleable Solids	Analytical	Method: SM 25	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		06/25/16 12:10		
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		06/29/16 14:10		



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

MPRP/36591

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1789145

Matrix: Water

Associated Lab Samples:

60222195001, 60222195002

Blank

Reporting

Parameter

Units

Result

Limit

Analyzed

Qualifiers

Zinc

mg/L

ND

0.050

07/08/16 15:03 0.0071

MS

% Rec

LABORATORY CONTROL SAMPLE: Parameter

1789146

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Zinc

Units mg/L

1.0

100

MDL

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

0.16

1789148

60222195001

MS Spike

1

MSD Spike

MSD

1.1

MSD % Rec % Rec

Max

Zinc

Date: 07/11/2016 03:58 PM

Parameter Units Result

mg/L

Conc.

MS Conc. Result

Result 1.1 95

Limits 75-125

RPD RPD

Qual



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

MPRP/36585

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET Dissolved

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1789116

Units

mg/L

Matrix: Water

Associated Lab Samples:

Parameter

Parameter

60222195001, 60222195002

Blank

Reporting Limit

MDL

Analyzed

Qualifiers

Zinc, Dissolved

Units mg/L Result ND

0.050

0.0071

07/08/16 11:14

LABORATORY CONTROL SAMPLE: 1789117

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Zinc, Dissolved

Zinc, Dissolved

Units mg/L

1.0

100

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1789118

MSD

1789119 MS

MS MSD

% Rec

MSD

% Rec

Max

Parameter

MS

Spike Conc.

Result

% Rec

Limits

RPD RPD

Qual

0.019J

60222195001 Spike Result

Conc.

Result 1.0

1.0

100

75-125

20

Date: 07/11/2016 03:58 PM



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

OEXT/54934

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1786718

Associated Lab Samples: 60222195001, 60222195002

Matrix: Water

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	10.0	2.5	07/06/16 19:04	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	07/06/16 19:04	
Pentachlorophenol	ug/L	ND	10.0	2.5	07/06/16 19:04	
Phenanthrene	ug/L	ND	10.0	2.5	07/06/16 19:04	
Pyrene	ug/L	ND	10.0	2.5	07/06/16 19:04	
2,4,6-Tribromophenol (S)	%	90	39-120		07/06/16 19:04	
2-Fluorobiphenyl (S)	%	80	39-120		07/06/16 19:04	
2-Fluorophenol (S)	%	44	17-120		07/06/16 19:04	
Nitrobenzene-d5 (S)	%	80	33-120		07/06/16 19:04	
Phenol-d6 (S)	%	30	11-120		07/06/16 19:04	
Terphenyl-d14 (S)	%	84	45-120		07/06/16 19:04	

ABORATORY CONTROL SAMPLE:	1786719	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cenaphthene	ug/L	50	44.9	90	51-120	
ideno(1,2,3-cd)pyrene	ug/L	50	42.1	84	52-120	
entachlorophenol	ug/L	50	45.3	91	47-120	
nenanthrene	ug/L	50	44.7	89	54-120	
rene	ug/L	50	45.2	90	56-115	
6-Tribromophenol (S)	%			97	39-120	
uorobiphenyl (S)	%			86	39-120	
uorophenol (S)	%			46	17-120	
obenzene-d5 (S)	%			84	33-120	
nol-d6 (S)	%			30	11-120	
phenyl-d14 (S)	%			95	45-120	

MATRIX SPIKE SAMPLE:	1786720	60222195001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	ND	51	42.3	83	48-120	
Indeno(1,2,3-cd)pyrene	ug/L	ND	51	40.4	79	50-120	
Pentachlorophenol	ug/L	ND	51	42.8	84	43-135	
Phenanthrene	ug/L	ND	51	42.3	82	54-120	
Pyrene	ug/L	ND	51	41.8	82	53-115	
2,4,6-Tribromophenol (S)	%				88	39-120	
2-Fluorobiphenyl (S)	%				76	39-120	
2-Fluorophenol (S)	%				43	17-120	





Project:

SW Monthly 001/002

Pace Project No.: 60222195

Date: 07/11/2016 03:58 PM

MATRIX SPIKE SAMPLE:	1786720	60222195001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)	%				75	33-120	
Phenol-d6 (S)	%				30	11-120	
Terphenyl-d14 (S)	%				84	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

OEXT/54942

Analysis Method:

EPA 8270 by SIM

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water PAH by SIM MSSV

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1786748

Date: 07/11/2016 03:58 PM

Matrix: Water

Associated Lab Samples: 60222195001, 60222195002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibenz(a,h)anthracene	ug/L	ND	0.10	0.040	07/06/16 16:22	
2-Fluorobiphenyl (S)	%	80	21-117		07/06/16 19:04	
Terphenyl-d14 (S)	%	84	21-131		07/06/16 19:04	

LABORATORY CONTROL SAMPLE:	1786749					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L	1	0.88	88	37-122	
2-Fluorobiphenyl (S)	%			84	21-117	
Terphenyl-d14 (S)	%			75	21-131	

MATRIX SPIKE & MATRIX SPIR	KE DUPLIC	ATE: 17867:	50		1786751								
			MS	MSD									
	6	60222195001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max		
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual	
Dibenz(a,h)anthracene	ug/L	ND	1	1.1	0.95	1.0	93	91	14-140	6	50		
2-Fluorobiphenyl (S)	%						82	79	21-117				
Terphenyl-d14 (S)	%						72	70	21-131				



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

WET/62833

Analysis Method:

EPA 1664A

QC Batch Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1789711

Matrix: Water

Associated Lab Samples:

60222195001, 60222195002

Blank

Reporting Limit

Analyzed

Qualifiers

Oil and Grease

Units

Result ND

5.0

5.0 07/07/16 14:43

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

1789712

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Oil and Grease

Units mg/L

mg/L

mg/L

mg/L

40

34.9

87

MDL

78-114

Qualifiers

MATRIX SPIKE SAMPLE:

1789713

Parameter

60222195001 Units

Result

ND

Spike Conc.

41.7

ND

23.5

MS % Rec

56

18

% Rec Limits

78-114 M1

Qualifiers

SAMPLE DUPLICATE: 1789714

Oil and Grease

Oil and Grease

Date: 07/11/2016 03:58 PM

Parameter

60222195001 Units Result

ND

Dup Result

RPD

MS

Result

Max RPD

Qualifiers



Project:

SW Monthly 001/002

Pace Project No.:

60222195

QC Batch:

WETA/40314

Analysis Method:

EPA 420.1

QC Batch Method:

EPA 420.1

Analysis Description:

Matrix: Water

420.1 Phenolics Macro

Associated Lab Samples:

60222195001, 60222195002

METHOD BLANK: 1784782

Associated Lab Samples:

60222195001, 60222195002

Blank Result

Reporting

Limit

MDL Analyzed Qualifiers

Phenolics, Total Recoverable

Parameter

Parameter

Parameter

Parameter

mg/L

Units

ND

0.050

06/29/16 13:57 0.011

LABORATORY CONTROL SAMPLE: 1784783

Spike Conc.

LCS Result

ND

ND

LCS % Rec % Rec Limits

Qualifiers

Phenolics, Total Recoverable

Units mg/L

Units

mg/L

Units

mg/L

mg/L

.5

0.51

101

0.52

0.52

90-110

103

101

MATRIX SPIKE SAMPLE:

1784784

60222007002 Result

Spike Conc.

MS Result

MS % Rec % Rec Limits

90-110

90-110

Qualifiers

MATRIX SPIKE SAMPLE:

Phenolics, Total Recoverable

Phenolics, Total Recoverable

1784786

60222195001 Result

Spike Conc.

MS Result

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1784785

Parameter Phenolics, Total Recoverable

Date: 07/11/2016 03:58 PM

60222061002 Units Result

Dup Result

ND

ND

RPD

Max RPD

Qualifiers

20





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60222195

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pac

Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 07/11/2016 03:58 PM

М1

Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.:

Date: 07/11/2016 03:58 PM

60222195

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60222195001	OUTFALL 001	EPA 3010	MPRP/36591	EPA 6010	ICP/26670
60222195002	OUTFALL 002	EPA 3010	MPRP/36591	EPA 6010	ICP/26670
60222195001	OUTFALL 001	EPA 3010	MPRP/36585	EPA 6010	ICP/26666
60222195002	OUTFALL 002	EPA 3010	MPRP/36585	EPA 6010	ICP/26666
60222195001	OUTFALL 001	EPA 625	OEXT/54934	EPA 625	MSSV/17897
60222195002	OUTFALL 002	EPA 625	OEXT/54934	EPA 625	MSSV/17897
60222195001	OUTFALL 001	EPA 3510	OEXT/54942	EPA 8270 by SIM	MSSV/17894
60222195002	OUTFALL 002	EPA 3510	OEXT/54942	EPA 8270 by SIM	MSSV/17894
60222195001	OUTFALL 001	EPA 1664A	WET/62833		
60222195002	OUTFALL 002	EPA 1664A	WET/62833		
60222195001	OUTFALL 001	SM 2540F	WET/62625		
60222195002	OUTFALL 002	SM 2540F	WET/62625		
60222195001	OUTFALL 001	EPA 420.1	WETA/40314		
60222195002	OUTFALL 002	EPA 420.1	WETA/40314		



Sample Condition Upon Receipt

WO#: 60222195

Earth Con-ID Premo) Client Name: Optional FedEx Z UPS [PEX [] ECI 🗆 Other
Client Clay □ Pace 🗆 Courier: Proj Due Date: 783439046970 Pace Shipping Label Used? Yes □ Tracking #: Proi Name: Yes Z No 🗆 Seals intact: Yes No □ Custody Seal on Cooler/Box Present: Bubble Bags 🗹 Foam None Other Bubble Wrap Packing Material: Type of Ice: Web Blue None

Samples received on ice, cooling process has begun. Thermometer Used: (circle one) Cooler Temperature: Date and initials of person examining contents: DV6/25/11 Temperature should be above freezing to 6°C ØYes □No □N/A Chain of Custody present: Zyes □No □N/A Chain of Custody filled out: Zyes □No □N/A Chain of Custody relinquished: □No □N/A ZYes Sampler name & signature on COC: □No □N/A Samples arrived within holding time: □No □N/A 5.5 Short Hold Time analyses (<72hr): ZNo □Yes □N/A Rush Turn Around Time requested: ZYes □No □N/A Sufficient volume: Zives □No □N/A Correct containers used: Ayes □№ □N/A Pace containers used: Øyes □No □N/A Containers intact: 10. □Yes □No ZN/A Unpreserved 5035A soils frozen w/in 48hrs? 11. □Yes □No ZN/A 12. Filtered volume received for dissolved tests? ZYes □No □N/A Sample labels match COC: Includes date/time/ID/analyses 13. All containers needing preservation have been checked. Ziyes 🗆 No □N/A All containers needing preservation are found to be in compliance □No □N/A with EPA recommendation. Initial when Lot # of added Zyes Exceptions: VOA, Coliform, (&G)WI-DRO (water) □No completed preservative Trip Blank present: □Yes □No ZN/A Pace Trip Blank lot # (if purchased): Headspace in VOA vials (>6mm): □Yes □No ØN/A ☐Yes ☐No ZN/A 17. List State: Project sampled in USDA Regulated Area: □Yes □No Additional labels attached to 5035A vials in the field? Copy COC to Client? Client Notification/ Resolution: Field Data Required? Person Contacted: Date/Time: Comments/ Resolution: 6-27-16 Date: Project Manager Review:



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Sectio Require	n A ed Client Information:	Section B Required Pro	ject infar	mation:			6 		ction C		ť.					a.						Pag	ge:	i.		of		
Compar	EarthCon Site Services Inc	Report To: S	һеті Н	arvey					ntion.		***********	farvey					7					-	Ĭ.			-		
Address	1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: Lo	renzo	Pittsley (lorenzov	vp3@yaho	oo.com)	Con	iļvany N	ame:	Eart	hCon	Site S	ervic	es In	C	1	REGU	LAT	ORY	AG	ENC	Y				-	
	Marietta GA 30062	A	ison Le	evinson (alevinso	n@earthc	on.com)	Add	n:ss:				<u></u>					₹ N	PDES	ў Г	- G	ROU	I DINI	WATE	ER 🗂	DRINKIN	G WAT	ER
Email To	sharvey@earthcon.com	Purchase Ord	er No.:	C.		jii aanalagaalaa	× ,		Quate rence:			, , , , , , , , , , , , , , , , , , , 						r u	ST	Ţ	R	CRA	1 4 5. Ja			OTHER	<u></u>	
Phone:	770-973-2100 Fax: 770-973-7395	Project Name:	SW	Monthly	001/002	313 11		Pace	Project	Tru	idy C	Sipson	913-	563-1	1405	5.5		Site I	ocat	ion			-	1				
Reques	ted Due Date/TAT: STANDARD	Project Numb	er: Inte	mational	Paper	Joplin, MC)	Mani Pace	rofile i	849	98 L	ine 1						1,64	STAT			Viss	ouri					
		<u> </u>			- * * . - * * ::				-						Re	aues	ted A				d (Y	N)		V//	//////// ////////////////////////////		M	
	Section D Valid Matrix Conception Client Information MATRIX DRINKING WATER WATER	CODE DW	C=COMP)		COLL	ECTED	Z.		L	Pre	servi	atives		N /V			- 30"						T					
ITEM#	SAMPLE ID SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE: TISSUE	p Si.	TYPE (G=GRAB	COMPINE STA	CSITE RT	COMPCENDIG	SAMPLE TEMP AT COLLEC	CONTAINERS	Unpreserved	HZSU4 HNO3	HOI	Na2S2O₃	Methanol Other	Analysis Test	086	Prenois Settleable Solids	Total Recoverable Zinc	625 BNA* 8270 SIM (Dibenz(8,h)anthracene)		Dissolved Zinc		**		Residual Chlorine (Y/N)	(QC	1222 Project		i.
1	12 AGIU OUTFALL 001 18 934	4035° V	ντ G	ххх	ххх	4416	0900	18	14	1 1	2	BP3a	•		×	x x	X	хх	×	x I	501	£ 2#	KIN		RQS			ट्य
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1	H 002 6,74						RE of SAMPLER							1			ned Y):	61.	24	1/1	16		1	Temp	Received or (ce (Y/N)	Custody Sealed Cooler (Y/N)		Samples In (Y/N)



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Phone: 612.607.1700 Fax: 612.607.6444

Report Prepared for:

Trudy Gipson PACE Kansas 9608 Loiret Blvd Lenexa KS 66219

> REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10353606

Sample Receipt Date: 06/28/2016

Client Project #: 60222195

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

July 06, 2016

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

Page 25 of 39

Report Prepared Date:

July 6, 2016



Pace Analytical Services, Inc. 1700 Elm Street

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. Per request, the reporting limits were set to 4.4 pg/L.

The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 71-94%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean water or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 87-135% with relative percent differences of 0.4-19.4%. The background-subtracted recovery value obtained for OCDD in the primary matrix spike sample was below the target range, possibly due to variability between the sample aliquots.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
lowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

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Report No.....10353606

Appendix A

Sample Management

Chain of Custody



Repor Workorder: 60222195 Workorder Name: SW Monthly 001/002 Owner Received Date: 6/25/2016 Results Requested By: 7/20/2016 C Region to the state of the st Trudy Gipson Pace Analytical Minnesota Pace Analytical Kansas 9608 Loiret Blvd. 1700 Elm Street Suite 200 Chenexa, KS 66219 Chone (913)599-5665 Minneapolis, MN 55414 Phone (612)607-1700 LAB USE ONLY OUTFALL 001 RQS 6/24/2016 09:00 60222195001 Water 4 Х OUTFALL 002 PS 60222195002 Water 2 6/24/2016 10:00 5 Report only Dioxins Date/Time Date/Time **Transfers** Released By Run QC on 60222195001 // / O Need 4.4 pg/L Need EDD Samples Intack Yor Cooler Temperature on Receipt 5,4°C Received on Ice **Custody Seal**

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical*	Document Name: Sample Condition Upon Receipt Form	Document Revised: 04Apr2016 Page 1 of 1
	Document No.:	Issuing Authority:
	F-MN-L-213-rev.16	Pace Minnesota Quality Office

Sample Condition Upon Receipt Client Name:	-		Project	* WO#:10353606
ourier: Fed Ex UPS	USPS		lient	
Commercial Pace SpeeDee Tracking Number:	Other:_			10353606
Custody Seal on Cooler/Box Present?	lo s	ieals Int	act?	Yes No Optional: Proj. Due Date: Proj. Name:
Packing Material: Bubble Wrap Bubble Bag	s None		Other:	Temp Blank?
Thermometer	IVA	of ice:	. Diwe	t Blue None Samples on Ice, cooling process has beg
Cooler Temp Read (°C): 5.5 Cooler Temp C	orrected (°C)	: <i>5</i> .	7	Biological Tissue Frozen? Yes No MN/
emp should be above freezing to 6°C Correction Fa			Dat	e and initials of Person Examining Contents:
SDA Regulated Soil (N/A, water sample)		D 43 C		ID IA Did consider adalash forms for the constitutional to
id samples originate in a quarantine zone within the United AS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?			Yes	☐No including Hawaii and Puerto Rico)? ☐Yes ☐M
If Yes to either question, fill out a Re	egulated Soil	Checkli	st (F-MN-	Q-338) and include with SCUR/COC paperwork.
				COMMENTS:
Chain of Custody Present?	Yes	□ No	N/A	1.
Chain of Custody Filled Out?	Yes	□No	N/A	2.
Chain of Custody Relinquished?	Yes	No	□n/a	3.
Sampler Name and/or Signature on COC?	Yes	No	□N/A	4.
Samples Arrived within Hold Time?	Yes	No	□N/A	5.
Short Hold Time Analysis (<72 hr)?	☐Yes	No	□N/A	6.
Rush Turn Around Time Requested?	□Yes	Νο	□N/A	7.
Sufficient Volume?	Yes	□No	□N/A	8.
Correct Containers Used?	Yes	□No	□N/A	9.
-Pace Containers Used?	₹ [Yes	□No	□N/A	
Containers intact?	Yes	□No	□n/a	10.
Filtered Volume Received for Dissolved Tests?	□Yes	□No	□¶#/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	1 Yes	□No	□N/A	12.
-Includes Date/Time/ID/Analysis Matrix: All containers needing acid/base preservation have been				
checked? All containers needing preservation are found to be in	∐Yes	□No	A/MFF.	13. ☐HNO₃ ☐H₂SO₄ ☐NaOH ☐HCI Sample#
compliance with EPA recommendation? (HNO₃, H₂SO₄, HCI<2; NaOH >9 Suifide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC, Oll and Grease,	∐Yes	□No	A/MJ	initial when Lot # of added
DRO/8015 (water) DOC	∐Yes	□No	SIN/A	completed: preservative:
Headspace in VOA Vials (>6mm)?	Yes	No	ATN/A	14.
Trip Blank Present?	□Yes	□No	N/A	15.
Trip Blank Custody Seals Present?	□Yes	□No	IZ N/A	·
Pace Trip Blank Lot # (If purchased):			•	
CLIENT NOTIFICATION/RESOLUTION				Field Data Required? Yes No
Person Contacted:				Date/Time:
Comments/Resolution:				
Project Manager Review:	C. Um			Date: 06/28/16

Page 30 of 39



Tel: 612-607-1700 Fax: 612- 607-6444

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

Appendix B

Sample Analysis Summary



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By OUTFALL 001 60222195001 U160701B_13

Total Amount Extracted % Moisture

BAL 950 mL NA

Matrix Water Dilution NA

NA 06/24/2016 09:00

Dry Weight Extracted ICAL ID CCal Filename(s)
Method Blank ID

NA U160204 U160701B_01 BLANK-50893 Collected Received Extracted Analyzed

06/28/2016 10:00 06/29/2016 13:25 07/02/2016 02:40

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	ND		4.4	2,3,7,8-TCDD-13C	2.00	94
Total TCDD	ND		4.4	1,2,3,7,8-PeCDD-13C	2.00	86
				1,2,3,4,7,8-HxCDD-13C	2.00	84
1,2,3,7,8-PeCDD	ND		4.4	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	23.0		4.4 J	1,2,3,4,6,7,8-HpCDD-13C	2.00	86
				OCDD-13C	4.00	88
1,2,3,4,7,8-HxCDD	15.0		4.4 J			-
1,2,3,6,7,8-HxCDD	24.0		4.4 J	1,2,3,4-TCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD	24.0		4.4 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA NA
Total HxCDD	210.0		4.4	1,2,0,7,0,0-110000-100	2.00	1107
TOTALLINGED	210.0		7.7	2 2 7 0 TODD 270M	0.00	
400467011-000	050.0		4.4	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,4,6,7,8-HpCDD	850.0		4.4	Total 2,3,7,8-TCDD		
Total HpCDD	1700.0		4.4	Equivalence: 27 pg/L		
				(Using ITE Factors)		
OCDD	10000.0		4.4	,		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration ND = Not Detected NA = Not Applicable NC = Not Calculated

RL = Reporting Limit

J = Estimated value
A = Reporting Limit based on signal to noise



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID **OUTFALL 002** 60222195002 Lab Sample ID U160701B_14 Filename Injected By BAL 946 mL **Total Amount Extracted**

Matrix Water Dilution NA % Moisture NA

Collected 06/24/2016 10:00 **Dry Weight Extracted** NA Received 06/28/2016 10:00 U160204 ICÁL ID U160701B_01 Extracted 06/29/2016 13:25 CCal Filename(s) Method Blank ID **BLANK-50893** Analyzed 07/02/2016 03:24

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	88 83 80
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	71 84 85
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 15.0		4.4 4.4 4.4 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	140.0 280.0		4.4 4.4	2,3,7,8-TCDD-37Cl4 Total 2,3,7,8-TCDD Equivalence: 3.3 pg/L (Using ITE Factors)	0.20	90
OCDD	1600.0		4.4	(Using The Factors)		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

J = Estimated value

RL = Reporting Limit

ND = Not Detected NA = Not Applicable

NC = Not Calculated



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Blank Analysis Results

Lab Sample ID Filename Total Amount Extracted

Total Amount Extracted ICAL ID CCal Filename(s)

BLANK-50893 U160701B_04 1050 mL U160204 U160701B_01

Matrix
Dilution
Extracted

Water NA

Extracted Analyzed 06/29/2016 13:25 07/01/2016 20:05

Injected By BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD	ND	<u> </u>	4.4	2,3,7,8-TCDD-13C	2.00	97
Total TCDD	ND		4.4	1,2,3,7,8-PeCDD-13C	2.00	88
				1,2,3,4,7,8-HxCDD-13C	2.00	85
1,2,3,7,8-PeCDD	ND		4.4	1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND		4.4	1,2,3,4,6,7,8-HpCDD-13C	2.00	89
				OCDD-13C	4.00	91
1,2,3,4,7,8-HxCDD	ND		4.4			٠.
1,2,3,6,7,8-HxCDD	ND		4.4	1.2.3.4-TCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD	ND		4.4	1,2,3,7,8,9-HxCDD-13C	2.00	ŇA
Total HxCDD	ND		4.4	1,2,0,1,0,0 11,000	2.00	
101011110000			•••	2,3,7,8-TCDD-37Cl4	0.20	94
1,2,3,4,6,7,8-HpCDD	ND		4.4	Total 2,3,7,8-TCDD	0.20	9 4
Total HpCDD	ND		4.4			
Total Tipodd	ND		4.4	Equivalence: 0.00 pg/L (Using ITE Factors)		
OCDD	ND		4.4	(Using HE ractors)		
OCDD	ND		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Laboratory Control Spike Results

Lab Sample ID
Filename
Total Amount Extracted
ICAL ID
CCal Filename
Method Blank ID

LCS-50894 U160701B_17 1030 mL U160204 U160701B_01 BLANK-50893

Matrix Dilution Extracted Analyzed

Water NA

06/29/2016 13:25 07/02/2016 05:35

Injected By BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	10 50 50 50 50 50 50	8.9 48 53 57 60 57 120	6.7 35.0 35.0 38.0 32.0 35.0 78.0	15.8 71.0 82.0 67.0 81.0 70.0 144.0	89 96 106 113 119 114	
2,3,7,8-TCDD-37Cl4 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	10 100 100 100 100 100 200	8.6 83 73 73 63 78 170	3.1 20.0 21.0 21.0 25.0 26.0 26.0	19.1 175.0 227.0 193.0 163.0 166.0 397.0	86 83 73 73 63 78 84	

Cs = Concentration Spiked (ng/mL)

Cr = Concentration Recovered (ng/mL)

Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

^{* =} See Discussion



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Method Blank ID

Total Amount Extracted ICAL ID CCal Filename(s)

OUTFALL 001-MS 60222195001-MS U160701B 15 958 mL U160204 U160701B 01

BLANK-50893

Matrix Dilution Extracted Analyzed

Injected By

Water NA

06/29/2016 13:25 07/02/2016 04:08 BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.17	87	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	87 80 75
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.96	96	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	68 82 87
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.06 1.20 1.20	106 120 120	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.70	170	2,3,7,8-TCDD-37CI4	0.20	89
OCDD	2 00	10.23	511			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Total Amount Extracted ICAL ID

CCal Filename(s) Method Blank ID

OUTFALL 001-MSD 60222195001-MSD

U160701B_16 972 mL U160204 U160701B_01 **BLANK-50893** Matrix Dilution Extracted

Water NA

Analyzed

06/29/2016 13:25 07/02/2016 04:51

Injected By BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.18	88	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	88 78 77
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.96	96	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	65 84 88
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.07 1.25 1.25	107 125 125	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA ***
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.88	188	2,3,7,8-TCDD-37CI4	0.20	92
OCDD	2.00	12.42	621			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID OUTFALL 001 60222195001 60222195001-MS 60222195001-MSD

Sample Filename MS Filename MSD Filename U160701B_13 U160701B_15 U160701B_16 Dry Weights
Sample Amount
MS Amount
MSD Amount

NA NA NA

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Backgro	und Subtracted	
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDD	0.000	0.20	0.17	0.18	1.1	87	88	1.1
1,2,3,7,8-PeCDD	0.000	1.00	0.96	0.96	0.1	96	96	0.1
1,2,3,4,7,8-HxCDD	14.636	1.00	1.06	1.07	0.4	105	105	0.4
1,2,3,6,7,8-HxCDD	24.380	1.00	1.20	1.25	4.2	117	122	4.2
1,2,3,7,8,9-HxCDD	23.846	1.00	1.20	1.25	4.4	118	123	4.4
1,2,3,4,6,7,8-HpCDD	847.796	1.00	1.70	1.88	9.9	89	105	16.9
OCDD	10006.211	2.00	10.23	12.42	19.4	32	135	122.9

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference

NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan

T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa





July 18, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60222793

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on July 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Judy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

CC: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60222793

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587





SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60222793

Lab ID	ID Sample ID		Date Collected	Date Received
60222793001	OUTFALL 001	Water	07/04/16 10:45	07/06/16 06:50
60222793002	OUTFALL 002	Water	07/04/16 11:45	07/06/16 06:50



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.: 60222793

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60222793001	OUTFALL 001	EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 625	NAW	11	PASI-K
		EPA 8270 by SIM	NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K
60222793002	OUTFALL 002	EPA 6010	TDS	. 1	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 625	NAW	11	PASI-K
		EPA 8270 by SIM	NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K





Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method:

EPA 6010 Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:



Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method:

EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method: EPA 625 Description: 625 MSSV

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

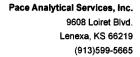
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method: E

EPA 1664A

Description: HEM, Oil and Grease

Client: EarthC

Cilent

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method:

SM 2540F

Description: 2540F Total Settleable Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60222793

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

July 18, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.:

Date: 07/18/2016 09:29 AM

60222793

Sample: OUTFALL 001	Lab ID:	60222793001	Collected:	07/04/16	10:45	Received: 07/	'06/16 06:50 Ma	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA 6	010 Prepara	ition Metho	od: EPA	3010			
Zinc, Total Recoverable	0.061	mg/L	0.050	0.0071	1	07/07/16 11:05	07/08/16 16:52	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepara	ition Metho	od: EPA	3010			
Zinc, Dissolved	0.038J	mg/L	0.050	0.0071	1	07/06/16 16:40	07/07/16 10:04	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	25 Preparati	ion Method	d: EPA	625			
Acenaphthene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 22:59	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 22:59	193-39-5	
Pentachlorophenol	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 22:59	87-86-5	
Phenanthrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 22:59	85-01-8	
Pyrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 22:59	129-00-0	
Surrogates		-							
Nitrobenzene-d5 (S)	70	%	33-120		1	07/11/16 00:00	07/12/16 22:59	4165-60-0	
2-Fluorobiphenyl (S)	75	%	39-120		1	07/11/16 00:00	07/12/16 22:59	321-60-8	
Terphenyl-d14 (S)	84	%	45-120		1	07/11/16 00:00	07/12/16 22:59	1718-51-0	
Phenol-d6 (S)	29	%	11-120		1	07/11/16 00:00	07/12/16 22:59	13127-88-3	
2-Fluorophenol (S)	42	%	17-120		1	07/11/16 00:00	07/12/16 22:59	367-12-4	
2,4,6-Tribromophenol (S)	82	%	39-120		1	07/11/16 00:00	07/12/16 22:59	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparatio	n Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	07/11/16 00:00	07/15/16 22:04	53-70-3	
2-Fluorobiphenyl (S)	75	%	21-117		1	07/11/16 00:00	07/12/16 22:59	321-60-8	
Terphenyl-d14 (S)	84	%	21-131		1	07/11/16 00:00	07/12/16 22:59	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		07/14/16 15:05		
2540F Total Settleable Solids	Analytical	Method: SM 2	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		07/06/16 08:45		
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		07/06/16 15:48		



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 6

Date: 07/18/2016 09:29 AM

60222793

Sample: OUTFALL 002	Lab ID:	60222793002	Collected:	07/04/1	6 11:45	Received: 07/	06/16 06:50 Ma	atrix: Water	
<u>.</u>			Report						_
Parameters	Results	Units	Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA 6	010 Prepara	ition Meth	od: EPA	3010			
Zinc, Total Recoverable	0.54	mg/L	0.050	0.0071	1	07/07/16 11:05	07/08/16 16:58	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepara	ition Meth	od: EPA	3010			
Zinc, Dissolved	0.47	mg/L	0.050	0.0071	1.	07/06/16 16:40	07/07/16 10:11	7440-66-6	
625 MSSV	Analytical	Method: EPA 6	25 Preparat	on Metho	d: EPA 6	325			
Acenaphthene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 23:20		
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00			
Pentachlorophenol	ND	ug/L	10.3	2.6	1	07/11/16 00:00			
Phenanthrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00			
Pyrene	ND	ug/L	10.3	2.6	1	07/11/16 00:00	07/12/16 23:20	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	50	%	33-120		1	07/11/16 00:00			
2-Fluorobiphenyl (S)	54	%	39-120		1	07/11/16 00:00	07/12/16 23:20		
Terphenyl-d14 (S)	63	%	45-120		1	07/11/16 00:00	07/12/16 23:20		
Phenol-d6 (S)	25	%	11-120		1	07/11/16 00:00			
2-Fluorophenol (S)	35	%	17-120		1	07/11/16 00:00			
2,4,6-Tribromophenol (S)	59	%	39-120		1	07/11/16 00:00	07/12/16 23:20	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.042	1	07/11/16 00:00	07/16/16 20:02	53-70-3	
2-Fluorobiphenyl (S)	54	%	21-117		1	07/11/16 00:00	07/12/16 23:20	321-60-8	
Terphenyl-d14 (S)	63	%	21-131		1	07/11/16 00:00	07/12/16 23:20	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		07/14/16 15:06		
2540F Total Settleable Solids	Analytical	Method: SM 25	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		07/06/16 08:45		
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1						
Phenolics, Total Recoverable	ND	mg/L	0.050	0.011	1		07/06/16 15:49		



Project:

SW Monthly 001/002

Pace Project No.:

60222793

QC Batch:

437495

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET

Associated Lab Samples:

60222793001, 60222793002

METHOD BLANK: 1789355

Units

mg/L

Units

mg/L

Matrix: Water

Associated Lab Samples:

60222793001, 60222793002

Blank Result Reporting Limit

Analyzed

Zinc

Units mg/L

ND

0.050

0.0071 07/08/16 16:03 Qualifiers

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

1789356

Spike Conc.

MS

Spike

Conc.

MS

Spike

Conc.

LCS Result

LCS % Rec

101

2.1

MDL

% Rec Limits

Zinc

Zinc

Zinc

Units mg/L

60222722007

Result

1240 ug/L

Result

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1789357

1789358 MS

Result

2.0

1.0

1.0

MSD Result MSD

% Rec Limits

Max

RPD RPD Qual

1

1789360

MS

% Rec

79

75-125

93

20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1789359

MSD

MSD

Spike

Conc.

MS

MSD

% Rec

% Rec

Max Qual

Parameter

60222793001

0.061

Spike Conc.

MS Result

MSD % Rec Result 1.0

% Rec 94

Limits 75-125

RPD RPD

20 0



Project:

SW Monthly 001/002

Pace Project No.:

QC Batch Method:

60222793

QC Batch:

437443 EPA 3010

Analysis Method: Analysis Description: EPA 6010

6010 MET Dissolved

Associated Lab Samples:

60222793001, 60222793002

METHOD BLANK: 1789129

Matrix: Water

Associated Lab Samples:

60222793001, 60222793002

Blank

Reporting Limit

MDL Analyzed Qualifiers

Zinc, Dissolved

Units mg/L

Result ND

0.050

0.0071

07/07/16 09:37

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

1789130

Spike Conc.

MS

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc, Dissolved

Units mg/L

0.98

98

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

MSD

1789132

1

MSD

Result

MSD

% Rec

Limits

Max

Zinc, Dissolved

Zinc, Dissolved

Date: 07/18/2016 09:29 AM

60222513001 Result

Spike Spike Conc. Conc. 1

MS Result 0.97

% Rec 0.97

MS

97

% Rec 96

RPD RPD 75-125

Qual 0 20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1789133

0.038J

ND

1789134

Max

RPD RPD Qual

60222793001 Parameter Units Result

Units

mg/L

mg/L

MS MSD Spike Spike Conc. Conc.

1

MS MSD Result Result

1.0

MS % Rec 1.0

MSD % Rec 98

% Rec Limits 75-125

1

20



Project:

SW Monthly 001/002

Pace Project No.:

60222793

QC Batch:

437925

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples:

Date: 07/18/2016 09:29 AM

60222793001, 60222793002

METHOD BLANK: 1791290

Matrix: Water Associated Lab Samples: 60222793001, 60222793002

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	10.0	2.5	07/12/16 18:02	•
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	07/12/16 18:02	
Pentachlorophenol	ug/L	ND	10.0	2.5	07/12/16 18:02	
Phenanthrene	ug/L	ND	10.0	2.5	07/12/16 18:02	
Pyrene	ug/L	ND	10.0	2.5	07/12/16 18:02	
2,4,6-Tribromophenol (S)	%	78	39-120		07/12/16 18:02	
2-Fluorobiphenyl (S)	%	75	39-120		07/12/16 18:02	
2-Fluorophenol (S)	%	45	17-120		07/12/16 18:02	
Nitrobenzene-d5 (S)	%	74	33-120		07/12/16 18:02	
Phenol-d6 (S)	%	30	11-120		07/12/16 18:02	
Terphenyl-d14 (S)	%	80	45-120		07/12/16 18:02	

ABORATORY CONTROL SAMPLE:	1791291	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
cenaphthene	ug/L	50	37.2	74	51-120	-
ndeno(1,2,3-cd)pyrene	ug/L	50	40.1	80	52-120	
entachlorophenol	ug/L	50	39.1	78	47-120	
enanthrene	ug/L	50	39.8	80	54-120	
rene	ug/L	50	39.8	80	56-115	
6-Tribromophenol (S)	%			77	39-120	
uorobiphenyl (S)	%			73	39-120	
uorophenol (S)	%			40	17-120	
obenzene-d5 (S)	%			71	33-120	
nol-d6 (S)	%			27	11-120	
phenyl-d14 (S)	%			80	45-120	

MATRIX SPIKE SAMPLE:	1791292						
		60222793001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	ND	50	35.3	71	48-120	
Indeno(1,2,3-cd)pyrene	ug/L	ND	50	36.3	73	50-120	
Pentachlorophenol	ug/L	ND	50	38.4	77	43-135	
Phenanthrene	ug/L	ND	50	36.9	74	54-120	
Pyrene	ug/L	ND	50	39.3	79	53-115	
2,4,6-Tribromophenol (S)	%		•		76	39-120	
2-Fluorobiphenyl (S)	%				69	39-120	
2-Fluorophenol (S)	%				40	17-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS





Project:

SW Monthly 001/002

Pace Project No.: 60222793

Date: 07/18/2016 09:29 AM

MATRIX SPIKE SAMPLE:	1791292						
		60222793001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)					65	33-120	
Phenol-d6 (S)	%				27	11-120	
Terphenyl-d14 (S)	%				80	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60222793

QC Batch:

437927

Analysis Method:

EPA 8270 by SIM

QC Batch Method: EPA 3510 Analysis Description:

8270 Water PAH by SIM MSSV

Associated Lab Samples:

60222793001, 60222793002

Matrix: Water

METHOD BLANK: 1791293

Date: 07/18/2016 09:29 AM

Associated Lab Samples: 60222793001, 60222793002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibenz(a,h)anthracene	ug/L	ND	0.10	0.040	07/15/16 21:28	
2-Fluorobiphenyl (S)	%	75	21-117		07/12/16 18:02	
Terphenyl-d14 (S)	%	80	21-131		07/12/16 18:02	

LABORATORY CONTROL SAMPLE:	179129 4	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L		0.87	87	37-122	
2-Fluorobiphenyl (S)	%			67	21-117	
Terphenyl-d14 (S)	%			95	21-131	

MATRIX SPIKE & MATRIX SF	IKE DUPLIC	ATE: 179129	95		1791296							
			MS	MSD								
	(60222793001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Dibenz(a,h)anthracene	ug/L	ND	1	1	0.68	0.73	67	70	14-140	7	50	
2-Fluorobiphenyl (S)	%						64	68	21-117			
Terphenyl-d14 (S)	%						91	92	21-131			



Project:

SW Monthly 001/002

Pace Project No.:

60222793

QC Batch:

438439

Analysis Method:

EPA 1664A

QC Batch Method: **EPA 1664A**

Analysis Description:

Matrix: Water

1664 HEM, Oil and Grease

Associated Lab Samples:

60222793001, 60222793002

METHOD BLANK: 1793104 Associated Lab Samples:

60222793001, 60222793002

Blank

Parameter

Units

Result

Reporting Limit

MDL Analyzed Qualifiers

Oil and Grease

mg/L

ND

5.0

07/14/16 15:02 5.0

LABORATORY CONTROL SAMPLE: 1793105

Parameter

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Oil and Grease

Oil and Grease

Units mg/L

mg/L

40

34.1

85

78-114

MATRIX SPIKE SAMPLE:

1793106

Parameter Units 60222984001 Result

Spike Conc.

40.8

MS Result

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1793107

Parameter

60222793001 Units Result

Dup Result

RPD

35.1

Max **RPD**

84

Qualifiers

78-114

Date: 07/18/2016 09:29 AM

Oil and Grease

mg/L

ND

ND

ND

18



Project:

SW Monthly 001/002

Pace Project No.:

60222793

QC Batch:

437290

Analysis Method:

EPA 420.1

QC Batch Method: EPA 420.1

Analysis Description:

Matrix: Water

420.1 Phenolics Macro

Associated Lab Samples:

Associated Lab Samples:

60222793001, 60222793002

METHOD BLANK: 1788535

60222793001, 60222793002

Blank

Parameter

Result

Reporting

Limit

MDL Analyzed

0.011

Qualifiers

Phenolics, Total Recoverable

mg/L

Units

Units

ND

0.050

07/06/16 15:39

LABORATORY CONTROL SAMPLE: 1788536

Spike Conc.

LCS Result

ND

ND

LCS % Rec % Rec Limits

Qualifiers

Phenolics, Total Recoverable

Parameter

mg/L

.5

0.53

105

0.55

0.50

107

100

20

90-110

MATRIX SPIKE SAMPLE:

1788537

Units Parameter Phenolics, Total Recoverable mg/L 60222591002 Result

Spike Conc.

.5

MS Result

MS % Rec % Rec Limits

90-110

90-110

Qualifiers

MATRIX SPIKE SAMPLE:

Phenolics, Total Recoverable

1788750

Units mg/L

Units

mg/L

60222793001 Result

Spike Conc.

MS Result

MS % Rec

% Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1788538

Parameter Phenolics, Total Recoverable

Parameter

60222594001 Result

ND

Dup Result

0.021J

RPD

Max RPD

Qualifiers

Date: 07/18/2016 09:29 AM





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60222793

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

Date: 07/18/2016 09:29 AM

PASI-K Pace Analytical Services - Kansas City

(913)599-5665



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.:

60222793

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
50222793001	OUTFALL 001	EPA 3010	437495	EPA 6010	437598
60222793002	OUTFALL 002	EPA 3010	437495	EPA 6010	437598
60222793001	OUTFALL 001	EPA 3010	437443	EPA 6010	437490
60222793002	OUTFALL 002	EPA 3010	437443	EPA 6010	437490
60222793001	OUTFALL 001	EPA 625	437925	EPA 625	438184
60222793002	OUTFALL 002	EPA 625	437925	EPA 625	438184
60222793001	OUTFALL 001	EPA 3510	437927	EPA 8270 by SIM	438759
80222793002	OUTFALL 002	EPA 3510	437927	EPA 8270 by SIM	438759
30222793001	OUTFALL 001	EPA 1664A	438439		
60222793002	OUTFALL 002	EPA 1664A	438439		
60222793001	OUTFALL 001	SM 2540F	437316		
60222793002	OUTFALL 002	SM 2540F	437316		
60222793001	OUTFALL 001	EPA 420.1	437290		
60222793002	OUTFALL 002	EPA 420.1	437290		



Sample Condition Upon Receipt

WO#:60222793

Eartheon-Ip
Client Name: (premo) Optional
Courier: FedEx UPS VIA Clay PEX ECI Pace Other Client Proj Due Date:
Tracking #: 809390116832 Pace Shipping Label Used? Yes No Proj Name:
Custody Seal on Cooler/Box Present: Yes ✓ No □ Seals intact: Yes ✓ No □
Packing Material: Bubble Wrap □ Bubble Bags □ Foam □ None □ Other □
Thermometer Used: T-289 T-239 Type of Ice: We Blue None
Cooler Temperature: 1-9/2-5/2-7 (circle one) Date and initials of person examining
Temperature should be above freezing to 6°C contents: pt/6/6
Chain of Custody present: ✓ Yes □No □N/A 1.
Chain of Custody filled out:
Chain of Custody relinquished: Tyes No N/A 3.
Sampler name & signature on COC: //Yes \(\text{IVes} \(\text{DNO} \) \(\text{DNA} \) 4.
Samples arrived within holding time: \(\int \text{Yes} \text{No} \text{DNA} \) 5.
Short Hold Time analyses (<72hr):
Rush Turn Around Time requested:
Sufficient volume: Yes \(\text{No} \) \(\text{In} \) \(\text{No} \) \(\text{In} \) \(\text{No} \)
Correct containers used:
Pace containers used: Ziyes □No □N/A g.
Containers intact: Yes \(\text{No} \) \(\text{In} \) \(\text{No} \) \(\text{In} \) \(\text{No} \) \(\text{In} \) \(\text{No} \) \(\text{In} \) \(\text{No} \) \(\text{In} \) \(\tex
Unpreserved 5035A soils frozen w/in 48hrs?
Filtered volume received for dissolved tests?
Sample labels match COC:
Includes date/time/ID/analyses Matrix: 13.
All containers needing preservation have been checked.
All containers needing preservation are found to be in compliance with EPA recommendation.
Exceptions: VOA, Coliform, ON Wil-DRO (water) Vest No No No No No No No N
Trip Blank present:
Pace Trip Blank lot # (if purchased):15.
Headspace in VOA vials (>6mm):
16.
Project sampled in USDA Regulated Area;
Additional labels attached to 5035A vials in the field?
Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N
Person Contacted: Date/Time:
Comments/ Resolution:
Project Manager Review: And Date: 7-4-16



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

	d Client Information:		Section E Required F		l Infon	mation:						ion C e Infoi		on:													Pag			€	я		
Compan	EarthCon S	ite Services Inc	Report To:	She	rri Ha	arvey				T	Attent	ion:	S	herri	Harv	ey											R	***************************************	************			*********	
Address	1880 W Oal	k Pkwy Bldg 100 Ste 106	Сору То:	Lore	nzo	Pittsley (lorenzov	vp3@yaho	o.com)	C	Comp	any N	ame;	Ea	thCo	n Sit	e Se	rvice	es In	С		REG	UL	ATO	RY	AGE	NCY	7				40.00	
	Marietta GA	30062		Aliso	on Le	evinson (alevinso	n@earthc	on.com)	7	ddre	ss:										F	NPC	DES	Г	GF	ROUN	ND V	NATI	ER I	DRINKING	3 WAT	ER
Email To	sharvey@ea	arthcon.com	Purchase (Order 1	Vo.:						ace C Refere				***************************************				****		7.7	UST RCRA OTHER											
Phone:	770-973-2100	Fax: 770-973-7395	Project Nar	me:	SW Monthly 001/002 Pace Project Trudy Gipson 913-563-1405									Site	a Lo	catio	un I																
Reques	ed Due Date/TAT:	STANDARD	Project Nur	mber.	Inte	rnational	Paper	Joplin, MC)			rofile #	*. 82	498	Line	1							57	TATE		N	lisso	uri	_				
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	Section D Required Client Informa	Valid Matrix (Codes CODE	(g)	MP)		COLL	EÇTED		T			Pri	eser	vative	es	Ť	3		T		П	T		T	Ì	Ń						
:	SAMPI	DRINIONG WATER WATER WASTE WATER PRODUCT SOIL/SOLID OIL		(see valid codes to left)	(G=GRAB C=COMP)	COMP STA	OSITE	COMPO END/G		AI COLLECTION	ERS							Test			Zinc		nz(a,h)anthracene)						rine (Y/N)				
ITEM#	(A-Z, 0-4 Sample IDs MUS		of C	MATRIX CODE	SAMPLE TYPE	DATE	TIME	DATE		SAMPLE IEMP A	# OF CONTAINERS	Unpreserved	HNO,	HCI	NaOH Na.S.O.	Methanol	Other	nalysis	0&6	Settleable Solids	Total Recoverable	NA.	SIM (Dibe	1613 Dioxin**	Dissolved Zillic				Residual Chlorine		Project N		-
1	12A614	OUTFALL 001 18 PSL	4655°	WT	G	xxx	xxx	74/6	1045		18	14	1 1	2	18 /2	J	2		×	ΚX	x	х	x	x >	× /1	DIL	2	46	·H	RQS			a)
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Phenani	hrene - Pyrene	-cd)pyrene - Pentachlorophenol -	1/0	721	61	PA	Usle	/	7/5/16		15	00	Z	W	1	<u></u>	m	95	<u></u>				_	160		06	50	7		1	フ	>	
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P	\$ 00 2	7.58							E of SAMPLE	R:	Z	721	er a	s c	10		The		PAT	E Sign				***********		**:			Temp	Received an Ice (Y/N)	Custody Sealed Cooler (Y/N)		Semples Intect (Y/N)

s not paid within 30 days.



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

Report Prepared for:

Trudy Gipson PACE Kansas 9608 Loiret Blvd Lenexa KS 66219

> REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:

July 12, 2016

Report Information:

Pace Project #: 10354773

Sample Receipt Date: 07/07/2016

Client Project #: 60222793

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

July 12, 2016

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Page 25 of 39



Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. Per request, the reporting limits were set to 4.4 pg/L.

The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 66-109%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In one case, an interfering substance impacted the determination of a PCDD congener; the affected value was flagged "I" due to an incorrect isotope ratio. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean reference matrix or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 80-131% with relative percent differences of 0.4-5.3%. These results were within the target ranges for the method.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
lowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

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Appendix A

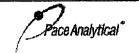
Sample Management

Chain of Custody



Repo [¬]Workorder: 60222793 Owner Received Date: 7/6/2016 Results Requested By: 7/28/2016 Workorder Name: SW Monthly 001/002 arenoteson established en la company de la c Trudy Gipson Pace Analytical Minnesota Pace Analytical Kansas 1700 Elm Street 9608 Loiret Blvd. Suite 200 Minneapolis, MN 55414 Phone (913)599-5665 Phone (612)607-1700 1613 LAB USE ONLY OUTFALL 001 RQS 7/4/2016 10:45 60222793001 Х Mi Water 4 007 2 OUTFALL 002 7/4/2016 11:45 60222793002 Water 2 X Report only Dioxins Date/Time **Transfers** Date/Time Received Run QC on 60222793001 7/7/IC 1000 Need 4.4 pg/L Need EDD Samples Intact or Custody Seal Y or Ν Cooler Temperature on Receipt Received on Ice (7)or

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name: Sample Condition Upon Receipt Form

Document No.: F-MN-L-213-rev.16 Document Revised: 04Apr2016 Page 1 of 1

Issuing Authority:
Pace Minnesota Quality Office

Sample Condition Upon Receipt Cilent Name:	. ma		Project	* WO#:10354773
	/\ _USPS _Other:_		lient	10354773
Custody Seal on Cooler/Box Present?	9	Seals inta	act? 🛭	Yes No Optional: Proj. Due Date: Proj. Name:
Packing Material: Bubble Wrap Bubble Bags	None	e 🖂 🤇	Other:	Temp Blank? ☐Yes ☐No
Thermometer151401163	Турс	a of Ice:	Ziwe	t Blue None Samples on ice, cooling process has begun
Used: 151401164		: 3.	1	Biological Tissue Frozen? ☐Yes ☐No ☐N/A
Temp should be above freezing to 6°C Correction Factor USDA Regulated Soil (N/A, water sample) Did samples originate in a quarantine zone within the United St. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?	r: <u>+ d</u> ates: AL, A	NR, AZ, CA	Dat , FL, GA, ∐Yes	ID, LA. Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)?
If Yes to either question, fill out a Regul	ated Soil		t (F-MN-	-Q-338) and include with SCUR/COC paperwork.
		7.72		COMMENTS:
Chain of Custody Present?	⊘ Yes	□No	□N/A	1.
Chain of Custody Filled Out?	⊿ Yes	□No	□N/A	2.
Chain of Custody Relinquished?		□No	N/A	4.
Sampler Name and/or Signature on COC?	[Z]Yes	□No	□N/A	5.
Samples Arrived within Hold Time?	Z Yes □ V	No ZÎNo	□N/A	6.
Short Hold Time Analysis (<72 hr)?	Yes		□N/A	7.
Rush Turn Around Time Requested? Sufficient Volume?	□Yes ☑Yes	_ No _	□N/A	8.
Correct Containers Used?	Yes	□ No	□N/A □N/A	9.
-Pace Containers Used?	Z Yes	∐No	□N/A)
	<u>i∠i</u> res Z Îγes	□No	□N/A	10.
Containers Intact? Filtered Volume Received for Dissolved Tests?		□No	ZN/A	11. Note if sediment is visible in the dissolved container
Nample Labels Match COC?	☐Yes ✓Yes	□No	<u>IZ</u> N/A	12.
Includes Date/Time/ID/Analysis Matrix: WT				to the contract of the contrac
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation?	Yes	∏No	⊠N/A	13. ☐HNO₃ ☐H₂SO₄ ☐NaOH ☐HCI Sample #
(HNO₃, H₂SO₄, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	∐Yes	∐No	ØN/A	
Exceptions: VOA, Coliform, TOC, Oll and Grease, DRO/8015 (water) DOC	□Yes	□No	⊠N/A	Initial when Lot # of added completed: preservative:
Headspace in VOA Vials (>6mm)?	☐Yes	□No·	ØN/A	14.
Trip Blank Present?	∐Yes	□No	ØN/A	15.
Trip Blank Custody Seals Present?	☐Yes	_ □No	ZN/A	12 Mag
Pace Trip Blank Lot # (if purchased):			<u>, </u>	
CLIENT NOTIFICATION/RESOLUTION				Field Data Required? Yes No
Person Contacted:	······································	_		Date/Time:
Comments/Resolution:				
			· · · · · ·	
Project Manager Review:	c. U	enegy.		Date: 07/07/16

Page 30 of 39

hold, incorrect preservative, out of temp, incorrect containers).



Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By

OUTFALL 001 60222793001 F160711A 06 BAL

Total Amount Extracted % Moisture

947 mL NA

Matrix Dilution NA

Water

Dry Weight Extracted ICÁL ID

CCal Filename(s)

Method Blank ID

NA F160602 F160711A 01 **BLANK-50978**

Collected Received Extracted Analyzed

07/04/2016 10:45 07/07/2016 10:00 07/08/2016 11:40 07/11/2016 06:08

EMPC Native Percent Conc RL Internal ng's Isomers **Standards** Added Recovery pg/L pg/L pg/L 2,3,7,8-TCDD-13C 2.3.7.8-TCDD ND 4.4 2.00 95 Total TCDD ND 4.4 1,2,3,7,8-PeCDD-13C 2.00 87 1,2,3,4,7,8-HxCDD-13C 2.00 92 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C 1,2,3,7,8-PeCDD ND 2.00 85 4.4 **Total PeCDD** ND 2.00 109 4.4 OCDD-13C 4.00 100 ND 1,2,3,4,7,8-HxCDD 4.4 1,2,3,6,7,8-HxCDD 6.2 1,2,3,4-TCDD-13C 2.00 NA 4.4 J 1,2,3,7,8,9-HxCDD 5.0 4.4 J 1,2,3,7,8,9-HxCDD-13C 2.00 NA 37.0 Total HxCDD 4.4 2,3,7,8-TCDD-37Cl4 0.20 98 1,2,3,4,6,7,8-HpCDD 160.0 Total HpCDD 290.0 4.4

4.4

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

1800.0

ND = Not Detected NA = Not Applicable NC = Not Calculated

RL = Reporting Limit

J = Estimated value

OCDD

REPORT OF LABORATORY ANALYSIS



Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID

Lab Sample ID

Filename

Injected By
Total Amount Extracted

Moisture

OUTFALL 002
60222793002
F160711A_07
BAL
970 mL
NA

Dry Weight Extracted NA ICAL ID F160602

CCal Filename(s) F160711A_01
Method Blank ID BLANK-50978

Matrix Water
Dilution NA
Collected 07/04/29

Received

Extracted

Analyzed

07/04/2016 11:45 07/07/2016 10:00 07/08/2016 11:40 07/11/2016 06:52

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	66 76 91
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	76 102 95
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND 23	4.4	4.4 4.4 IJ 4.4 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	200 450		4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	70
OCDD	2600		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

ND = Not Detected NA = Not Applicable NC = Not Calculated

J = Estimated value I = Interference present



Method 1613B Blank Analysis Results

Lab Sample ID Filename

Total Amount Extracted ICAL ID

CCal Filename(s)

BLANK-50978 F160710B_12 1020 mL

F160602 F160710B_03 Matrix Dilution Water NA

Extracted Analyzed 07/08/2016 11:40 07/10/2016 19:41

Injected By BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	92 84 94
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,4,7,3-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 2.00 4.00	88 108 97
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	ND ND ND		4.4 4.4 4.4	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND ND		4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	91
OCDD	ND		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit



Method 1613B Laboratory Control Spike Results

Lab Sample ID
Filename
Total Amount Extracted
ICAL ID
CCal Filename

Method Blank ID

LCS-50979 U160710B_05 1020 mL U160204 U160710B_01 BLANK-50978

Matrix Dilution Extracted

Water NA

Extracted 07/08/2016 11:40 Analyzed 07/10/2016 13:25 Injected By BAL

Compound	Os	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	10 50 50 50 50 50 50	8.0 43 50 53 54 50 110	6.7 35.0 35.0 38.0 32.0 35.0 78.0	15.8 71.0 82.0 67.0 81.0 70.0 144.0	80 85 100 105 108 100	
2,3,7,8-TCDD-37Cl4 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	10 100 100 100 100 100 200	11 100 91 92 80 99 210	3.1 20.0 21.0 21.0 25.0 26.0 26.0	19.1 175.0 227.0 193.0 163.0 166.0 397.0	108 101 91 92 80 99 104	

Cs = Concentration Spiked (ng/mL)

Cr = Concentration Recovered (ng/mL)

Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

^{* =} See Discussion



Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample İD Filename **Total Amount Extracted**

ICAL ID CCal Filename(s) Method Blank ID

OUTFALL 001-MS 60222793001-MS F160711A_03 964 mL

F160602 F160711A_01 **BLANK-50978** Matrix Dilution

Extracted Analyzed

Injected By

Water NA

07/08/2016 11:40 07/11/2016 03:53 BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.18	91	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	97 86 94
1,2,3,7,8-PeCDD Total PeCDD	1.00	1.00	100	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00	86 105 101
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.16 1.25 1.19	116 125 119	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.27	127	2,3,7,8-TCDD-37CI4	0.20	97
OCDD	2.00	4.32	216			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)



Tel: 612-607-1700

Fax: 612-607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Filename
Total Amount Extracted
ICAL ID

CCal Filename(s) Method Blank ID OUTFALL 001-MSD 60222793001-MSD

F160711A_04 968 mL F160602 F160711A_01 BLANK-50978 Matrix Dilution Extracted

Water NA

Extracted 07/08/2016 11:40
Analyzed 07/11/2016 04:38
Injected By BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.19	96	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	98 91 96
1,2,3,7,8-PeCDD Total PeCDD	1.00	1.02	102	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	85 109 99
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.22 1.26 1.19	122 126 119	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA maga
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.21	121	2,3,7,8-TCDD-37CI4	0.20	103
OCDD	2.00	4.15	208			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

Tel: 612-607-1700 Fax: 612-607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID

OUTFALL 001 60222793001 60222793001-MS 60222793001-MSD

Sample Filename MS Filename MSD Filename

F160711A_06 F160711A_03 F160711A_04

Dry Weights Sample Amount MS Amount MSD Amount

NΑ NA NA

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Background Subtracted			
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD	
2,3,7,8-TCDD	0.000	0.20	0.18	0.19	5.1	91	96	5.1	
1,2,3,7,8-PeCDD	0.000	1.00	1.00	1.02	2.3	100	102	2.3	
1,2,3,4,7,8-HxCDD	0.000	1.00	1.16	1.22	5.3	116	122	5.3	
1,2,3,6,7,8-HxCDD	6.171	1.00	1.25	1.26	0.5	124	125	0.5	
1,2,3,7,8,9-HxCDD	4.961	1.00	1.19	1.19	0.4	118	119	0.4	
1,2,3,4,6,7,8-HpCDD	156.920	1.00	1.27	1.21	5.0	112	105	5.7	
OCDD	1762.581	2.00	4.32	4.15	4.1	131	122	7.1	

Definitions

MS = Matrix Spike MS = Matrix Spike Duplicate

MSD = Matrix Spike Duplicate

Qm = Quantity Measured

Qs = Quantity Spiked

% Rec. = Percent Recovery

RPD = Relative Percent Difference

N4 = Net Applicable

NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan

T = Tetra Pe = Penta Hx = Hexa Hp = Hepta O = Octa





August 30, 2016

Ms Sherri Harvey
EarthCon Site Services Inc-International Paper
1880 West Oak Parkway
Building 100 Suite 106
Marietta, GA 30062

RE: Project: SW Monthly 001/002

Pace Project No.: 60225218

Dear Ms Harvey:

Enclosed are the analytical results for sample(s) received by the laboratory on August 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sudy Sipson

Trudy Gipson trudy.gipson@pacelabs.com Project Manager

Enclosures

cc: Ms Alison Levinson, EarthCon Site Services Inc-International Paper Mr Lorenzo Pittsley, EarthCon Site Services Inc-International Paper







CERTIFICATIONS

Project:

SW Monthly 001/002

Pace Project No.:

60225218

Kansas Certification IDs

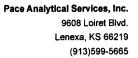
9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097 lowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

REPORT OF LABORATORY ANALYSIS





SAMPLE SUMMARY

Project:

SW Monthly 001/002

Pace Project No.:

60225218

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60225218001	OUTFALL 001	Water	08/07/16 16:00	08/09/16 07:50
60225218002	OUTFALL 002	Water	08/07/16 15:00	08/09/16 07:50



SAMPLE ANALYTE COUNT

Project:

SW Monthly 001/002

Pace Project No.:

60225218

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60225218001	OUTFALL 001	EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	1	PASI-K
		EPA 625	JMT	11	PASI-K
•		EPA 8270 by SIM	JMT, NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K
60225218002	OUTFALL 002	EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	1	PASI-K
		EPA 625	JMT	11	PASI-K
		EPA 8270 by SIM	JMT, NAW	3	PASI-K
		EPA 1664A	AGO	1	PASI-K
		SM 2540F	HAC	1	PASI-K
		EPA 420.1	RAB	1	PASI-K





Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

EPA 6010

Description: 6010 MET ICP

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method: EPA 6010

Description: 6010 MET ICP, Dissolved (LF)

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

EPA 625 Description: 625 MSSV

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.



Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

EPA 8270 by SIM Description: 8270 MSSV PAH by SIM

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

EPA 1664A

Description: HEM, Oil and Grease **Client:** EarthCon Site Service

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 1664A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

QC Batch: 444581

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.

• DUP (Lab ID: 1818024)

Oil and Grease





Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

SM 2540F

Description: 2540F Total Settleable Solids

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for SM 2540F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

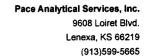
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.





Project:

SW Monthly 001/002

Pace Project No.:

60225218

Method:

EPA 420.1

Description: Phenolics, Total Recoverable

Client:

EarthCon Site Services Inc-International Paper

Date:

August 30, 2016

General Information:

2 samples were analyzed for EPA 420.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 442091

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60225218001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

• MS (Lab ID: 1808281)

· Phenolics, Total Recoverable

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.: 60225218

Date: 08/30/2016 04:30 PM

Sample: OUTFALL 001	Lab ID:	60225218001	Collected	1: 08/07/10	6 16:00	Received: 08/	09/16 07:50 M	atrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA	3010 Prepai	ration Meth	od: EPA	3010			
Zinc, Total Recoverable	0.050	mg/L	0.050	0.0071	1	08/09/16 15:00	08/10/16 21:08	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	010 Prepai	ration Meth	od: EPA	3010			
Zinc, Dissolved	0.012J	mg/L	0.050	0.0071	1	08/10/16 09:00	08/10/16 19:25	7440-66-6	
625 MSSV	Analytical	Method: EPA	325 Prepara	ition Metho	d: EPA	625			
Acenaphthene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/15/16 18:04	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/15/16 18:04	193-39-5	
Pentachlorophenol	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/15/16 18:04	87-86-5	
Phenanthrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00			
Pyrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/15/16 18:04	129-00-0	
Surrogates		•							
Nitrobenzene-d5 (S)	61	%	33-120		1	08/12/16 00:00			
2-Fluorobiphenyl (S)	57	%	39-120		1	08/12/16 00:00	08/15/16 18:04		
Terphenyl-d14 (S)	68	%	45-120		1	08/12/16 00:00			
Phenol-d6 (S)	24	%	11-120		1	08/12/16 00:00			
2-Fluorophenol (S)	35	%	17-120		1		08/15/16 18:04		
2,4,6-Tribromophenol (S)	74	%	39-120		1	08/12/16 00:00	08/15/16 18:04	118-79-6	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	3270 by SIM	Preparation	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	08/12/16 00:00	08/15/16 21:33	53-70-3	
2-Fluorobiphenyl (S)	57	%	21-117		1	08/12/16 00:00	08/15/16 18:04	321-60-8	
Terphenyl-d14 (S)	68	%	21-131		1	08/12/16 00:00	08/15/16 18:04	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	1664A						
Oil and Grease	ND	mg/L	5.0	5.0	1		08/29/16 16:36		
2540F Total Settleable Solids	Analytical	Method: SM 2	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		08/09/16 09:50		
Phenolics, Total Recoverable	Analytical	Method: EPA	20.1						
Phenolics, Total Recoverable	0.034J	mg/L	0.050	0.011	1		08/10/16 13:08		M1



ANALYTICAL RESULTS

Project:

SW Monthly 001/002

Pace Project No.:

Date: 08/30/2016 04:30 PM

60225218

Sample: OUTFALL 002	Lab ID:	60225218002	Collected	: 08/07/1	6 15:00	Received: 08/	09/16 07:50 Ma	ıtrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical	Method: EPA 6	010 Prepara	ation Meth	od: EPA	3010			
Zinc, Total Recoverable	0.031J	mg/L	0.050	0.0071	1	08/09/16 15:00	08/10/16 21:19	7440-66-6	
6010 MET ICP, Dissolved (LF)	Analytical	Method: EPA 6	i010 Prepara	ation Meth	od: EPA	3010			
Zinc, Dissolved	0.11	mg/L	0.050	0.0071	1	08/17/16 16:30	08/18/16 10:06	7440-66-6	D9
625 MSSV	Analytical	Method: EPA 6	25 Prepara	tion Metho	d: EPA (625			
Acenaphthene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/16/16 10:28	83-32-9	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/16/16 10:28	193-39-5	
Pentachlorophenol	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/16/16 10:28	87-86-5	
Phenanthrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/16/16 10:28	85-01-8	
Pyrene	ND	ug/L	10.2	2.6	1	08/12/16 00:00	08/16/16 10:28	129-00-0	
Surrogates	40	0/	00.400			004046 00-00	00/46/46 40:00	4465 60 0	
Nitrobenzene-d5 (S)	49	%	33-120		1	08/12/16 00:00			
2-Fluorobiphenyl (S)	46	%	39-120		1 1	08/12/16 00:00 08/12/16 00:00			
Terphenyl-d14 (S)	58 23	% %	45-120 11-120		1	08/12/16 00:00			
Phenol-d6 (S)	23 33	% %	17-120		1	08/12/16 00:00			
2-Fluorophenol (S) 2,4,6-Tribromophenol (S)	33 60	% %	39-120		1		08/16/16 10:28		
2,4,0-1110101110phenol (5)	60	76	39-120		'	08/12/10 00:00	00/10/10 10.20	110-73-0	
8270 MSSV PAH by SIM	Analytical	Method: EPA 8	270 by SIM	Preparati	on Meth	od: EPA 3510			
Dibenz(a,h)anthracene Surrogates	ND	ug/L	0.10	0.041	1	08/12/16 00:00	08/15/16 22:34	53-70-3	
2-Fluorobiphenyl (S)	46	%	21-117		1	08/12/16 00:00	08/16/16 10:28	321-60-8	
Terphenyl-d14 (S)	58	%	21-131		1	08/12/16 00:00	08/16/16 10:28	1718-51-0	
HEM, Oil and Grease	Analytical	Method: EPA 1	664A					•	
Oil and Grease	ND	mg/L	5.0	5.0	1		08/29/16 09:11		
2540F Total Settleable Solids	Analytical	Method: SM 2	540F						
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		08/09/16 09:50		
Phenolics, Total Recoverable	Analytical	Method: EPA 4	20.1						
Phenolics, Total Recoverable	0.042J	mg/L	0.050	0.011	1		08/10/16 13:11		

REPORT OF LABORATORY ANALYSIS



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch: QC Batch Method:

441998

EPA 3010

EPA 6010 6010 MET

Associated Lab Samples:

Associated Lab Samples:

60225218001, 60225218002

METHOD BLANK: 1807739

60225218001, 60225218002

Matrix: Water

Blank Result Reporting Limit

MDL

Analyzed

Qualifiers

Zinc

Units

mg/L

ND

Analysis Method:

Analysis Description:

0.050

0.0071 08/10/16 19:43

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Date: 08/30/2016 04:30 PM

Parameter

1807740

Units

mg/L

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc

Units mg/L

0.99

99

1.1

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1807741

MSD

1807742 MS

Result

1.0

MS

MSD

% Rec

Max

Zinc

60225218001 Result

0.050

MS Spike Conc.

Spike Conc.

MSD Result

% Rec % Rec

Limits

RPD RPD

75-125

Qual



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

442057

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET Dissolved

MDL

Associated Lab Samples:

METHOD BLANK: 1808182

Parameter

LABORATORY CONTROL SAMPLE:

Parameter

60225218001, 60225218002

Matrix: Water

ND

Associated Lab Samples:

60225218001, 60225218002

Blank

Reporting

Zinc, Dissolved

Units

Result

Limit 0.050

0.0071

Analyzed 08/10/16 18:37 Qualifiers

1808183

mg/L

Spike

% Rec

Zinc, Dissolved

Units mg/L

Conc.

LCS Result 1.0

LCS % Rec 101

Limits

80-120

Qualifiers

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1808184

MSD

MS

MSD

MS MSD % Rec

Max

Parameter Zinc, Dissolved

60225218001 Units Result mg/L

Spike

Spike Conc. Conc.

MS Result 1.0

1808185

Result

% Rec % Rec

Limits

RPD RPD

Date: 08/30/2016 04:30 PM

0.012J

1

1

0.99

99

75-125

Qual 20



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

443139

Analysis Method:

EPA 6010

QC Batch Method:

EPA 3010

Analysis Description:

6010 MET Dissolved

Associated Lab Samples:

METHOD BLANK: 1812155

Parameter

60225218002

Matrix: Water

Associated Lab Samples:

60225218002

Blank Result

Reporting

Limit

MDL Analyzed Qualifiers

Zinc, Dissolved

mg/L

Units

ND

0.050

0.0071 08/18/16 09:44

LABORATORY CONTROL SAMPLE:

Parameter

1812156

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Zinc, Dissolved

Units mg/L

1

102

80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

1812157

1812158

1.0

MS

MSD

MS

MSD

MS MSD % Rec

Max

Qual

Parameter Units Result 0.11 mg/L

Spike

Spike Conc.

Result Result

% Rec 97

Limits 100 75-125

RPD RPD

Zinc, Dissolved

60225218002

Conc.

1

1.1

1.1

% Rec

3

20

Date: 08/30/2016 04:30 PM



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

442411

Analysis Method:

EPA 625

QC Batch Method:

EPA 625

Analysis Description:

625 MSS

Associated Lab Samples:

Date: 08/30/2016 04:30 PM

60225218001, 60225218002

METHOD BLANK: 1809737

Associated Lab Samples: 60225218001, 60225218002

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/L	ND ND	10.0	2.5	08/15/16 09:14	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.5	08/15/16 09:14	
Pentachlorophenol	ug/L	ND	10.0	2.5	08/15/16 09:14	
Phenanthrene	ug/L	ND	10.0	2.5	08/15/16 09:14	
Pyrene	ug/L	ND	10.0	2.5	08/15/16 09:14	
2,4,6-Tribromophenol (S)	%	82	39-120		08/15/16 09:14	
2-Fluorobiphenyl (S)	%	67	39-120		08/15/16 09:14	
2-Fluorophenol (S)	%	40	17-120		08/15/16 09:14	
Nitrobenzene-d5 (S)	%	72	33-120		08/15/16 09:14	
Phenol-d6 (S)	%	27	11-120		08/15/16 09:14	
Terphenyl-d14 (S)	%	77	45-120		08/15/16 09:14	

ABORATORY CONTROL SAMPLE:	1809738	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	50	32.2	64	51-120	
deno(1,2,3-cd)pyrene	ug/L	50	35.2	70	52-120	
ntachlorophenol	ug/L	50	40.8	82	47-120	
enanthrene	ug/L	50	34.4	69	54-120	
rene	ug/L	50	35.6	71	56-115	
S-Tribromophenol (S)	%			80	39-120	
iorobiphenyl (S)	%			65	39-120	
uorophenol (S)	%			36	17-120	
obenzene-d5 (S)	%			69	33-120	
enol-d6 (S)	%			24	11-120	
rphenyl-d14 (S)	%			75	45-120	

MATRIX SPIKE SAMPLE:	1809739	60225218001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Acenaphthene	ug/L	ND	51	26.9	. 53	48-120	
Indeno(1,2,3-cd)pyrene	ug/L	ND	51	28.2	55	50-120	
Pentachlorophenol	ug/L	ND	51	35.5	70	43-135	
Phenanthrene	ug/L	ND	51	28.3	56	54-120	
Pyrene	ug/L	ND	51	30.4	60	53-115	
2,4,6-Tribromophenol (S)	%				66	39-120	
2-Fluorobiphenyl (S)	%				54	39-120	
2-Fluorophenol (S)	%				40	17-120	





Project:

SW Monthly 001/002

Pace Project No.: 60225218

Date: 08/30/2016 04:30 PM

MATRIX SPIKE SAMPLE:	1809739	60225218001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Nitrobenzene-d5 (S)	<u> </u>	,			59	33-120	
Phenol-d6 (S)	%				28	11-120	
Terphenyl-d14 (S)	%				62	45-120	



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

442412

Analysis Method:

EPA 8270 by SIM

QC Batch Method:

EPA 3510

Analysis Description:

8270 Water PAH by SIM MSSV

Associated Lab Samples:

Date: 08/30/2016 04:30 PM

60225218001, 60225218002

METHOD BLANK: 1809740

Matrix: Water

Associated Lab Samples: 60225218001, 60225218002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibenz(a,h)anthracene	ug/L	ND	0.10	0.040	08/15/16 20:53	· · · · · · · · · · · · · · · · · · ·
2-Fluorobiphenyl (S)	%	67	21-117		08/15/16 09:14	
Terphenyl-d14 (S)	%	77	21-131		08/15/16 09:14	

LABORATORY CONTROL SAMPLE:	1809741					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Dibenz(a,h)anthracene	ug/L		0.68	68	37-122	
2-Fluorobiphenyl (S)	%			62	21-117	
Terphenyl-d14 (S)	%			75	21-131	

MATRIX SPIKE & MATRIX SF	PIKE DUPLICA	TE: 18097	42		1809743							
•	6	0225218001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD		Qual
Dibenz(a,h)anthracene	ug/L	ND	1	1	0.60	0.59	59	59	14-140	2	50	
2-Fluorobiphenyl (S)	%						54	53	21-117			
Terphenyl-d14 (S)	%						63	62	21-131			



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

444459

Analysis Method:

EPA 1664A

QC Batch Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

MDL

METHOD BLANK: 1817758

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60225218002

60225218002

Reporting

Parameter

Units

Limit

Analyzed

Qualifiers

Oil and Grease

mg/L

ND

5.0

5.0 08/29/16 09:09

LABORATORY CONTROL SAMPLE:

Parameter

Parameter

Parameter

1817759

Spike Conc.

LCS Result

LCS % Rec % Rec Limits

Qualifiers

Oil and Grease

Units mg/L

mg/L

Units

40

Result

Blank

Result

33.9

85

78-114

113

18

MATRIX SPIKE SAMPLE:

1817760

60225826001 Units

Spike Conc.

14.1

MS Result

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1817761

60225748001

Dup

40.8

ND

60.2

Max

Qualifiers

78-114

Oil and Grease

Oil and Grease

mg/L

Result

ND

Result

RPD

RPD

Date: 08/30/2016 04:30 PM



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

444581

EPA 1664A

Analysis Method:

EPA 1664A

Analysis Description:

1664 HEM, Oil and Grease

QC Batch Method:

60225218001

METHOD BLANK: 1818021

Matrix: Water

Associated Lab Samples:

Associated Lab Samples:

60225218001

Blank Result Reporting Limit

MDL

Analyzed

Qualifiers

Oil and Grease

Units

ND

5.0

5.0 08/29/16 16:35

LABORATORY CONTROL SAMPLE: Parameter

Parameter

1818022

Spike Conc.

LCS Result

ND

99.4

LCS % Rec % Rec Limits

Qualifiers

Oil and Grease

Oil and Grease

Oil and Grease

Units mg/L

mg/L

40

34.8

87

78-114

MATRIX SPIKE SAMPLE:

1818023

Parameter Units 60225218001 Result

Spike Conc.

42.6

50.5

MS Result

33.3

65

MS % Rec % Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1818024

Parameter

Units

mg/L

mg/L

60225890001 Result

Dup Result

RPD

Max **RPD**

78

18 D6

Qualifiers

78-114



Project:

SW Monthly 001/002

Pace Project No.:

60225218

QC Batch:

442091

Analysis Method:

EPA 420.1

QC Batch Method:

EPA 420.1

Analysis Description:

Matrix: Water

420.1 Phenolics Macro

Associated Lab Samples:

60225218001, 60225218002

METHOD BLANK: 1808278

Associated Lab Samples:

60225218001, 60225218002

Units

mg/L

Units

mg/L

mg/L

Blank Result Reporting

Limit

0.050

MDL 0.011

Analyzed 08/10/16 13:04 Qualifiers

Phenolics, Total Recoverable

Parameter

LABORATORY CONTROL SAMPLE:

Parameter

1808279 Spike

0.034J

ND

ND

LCS Result

LCS % Rec

108

% Rec Limits

Qualifiers

Phenolics, Total Recoverable

mg/L

.5

0.54

.5

MATRIX SPIKE SAMPLE:

Phenolics, Total Recoverable

Phenolics, Total Recoverable

Date: 08/30/2016 04:30 PM

1808281

Parameter Units 60225218001 Result

Conc.

Spike Conc.

MS Result

MS % Rec

112

20

90-110

% Rec Limits

Qualifiers

SAMPLE DUPLICATE: 1808280

Parameter

60225084001 Units Result

Dup Result 0.019J

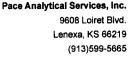
RPD

0.59

Max RPD

Qualifiers

90-110 M1





QUALIFIERS

Project:

SW Monthly 001/002

Pace Project No.:

60225218

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 08/30/2016 04:30 PM

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

D9 Dissolved result is greater than the total. Data is within laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:

SW Monthly 001/002

Pace Project No.: 60225218

Date: 08/30/2016 04:30 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60225218001	OUTFALL 001	EPA 3010	441998	EPA 6010	442029
60225218002	OUTFALL 002	EPA 3010	441998	EPA 6010	442029
60225218001	OUTFALL 001	EPA 3010	442057	EPA 6010	442113
60225218002	OUTFALL 002	EPA 3010	442057	EPA 6010	442113
60225218002	OUTFALL 002	EPA 3010	443139	EPA 6010	443207
60225218001	OUTFALL 001	EPA 625	442411	EPA 625	442690
80225218002	OUTFALL 002	EPA 625	442411	EPA 625	442690
60225218001	OUTFALL 001	EPA 3510	442412	EPA 8270 by SIM	442724
60225218002	OUTFALL 002	EPA 3510	442412	EPA 8270 by SIM	442724
60225218001	OUTFALL 001	EPA 1664A	444581		
60225218002	OUTFALL 002	EPA 1664A	444459		
60225218001	OUTFALL 001	SM 2540F	441954		
60225218002	OUTFALL 002	SM 2540F	441954		
60225218001	OUTFALL 001	EPA 420.1	442091		
60225218002	OUTFALL 002	EPA 420.1	442091		



Sample Condition Upon Receipt



Client Name: Enthlow - IP	Optional
Courier: FedEx∕☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐	Pace □ Other □ Client □ Proj Due Date:
Tracking #: 7837 7301 9178 Pace Shipping Label	Used? Yes □ No □ Proj Name:
Custody Seal on Cooler/Box Present: Yes No □ Seals intact:	Yes ☑ No 🗆
Packing Material: Bubble Wrap □ Bubble Bags Ø Foam	□ None □ Other □
Thermometer Used: (F-269 / T-239 Type of Ice: (Det E	lue None Samples received on ice, cooling process has begun.
Cooler Temperature: 1.4 1.6 (circ	Date and initials of person examining
Temperature should be above freezing to 6°C	contents: (M 8/9/16
Chain of Custody present: ✓Yes ☐No ☐N/A	. 1.
Chain of Custody filled out: ☐Yes ☐No ☐N/A	2.
Chain of Custody relinquished: ☐Yes ☐No ☐N/A	3.
Sampler name & signature on COC: ☑Yes □No □N/A	4.
Samples arrived within holding time: ∠Yes □No □N/A	5.
Short Hold Time analyses (<72hr):	6. Self Sal
Rush Turn Around Time requested:	7.
Sufficient volume: ☐Yes ☐No ☐N/A	8.
Correct containers used:	
Pace containers used: ☐Yes ☐No ☐N/A	9.
Containers intact: ☐Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs? □Yes □No ☑N/A	11.
Filtered volume received for dissolved tests?	12.
Sample labels match COC:	
Includes date/time/ID/analyses Matrix: w+	13.
All containers needing preservation have been checked. ☐Yes ☐No ☐N/A	
All containers needing preservation are found to be in compliance Tyes \(\subseteq No \) \(\subseteq N/A \) with EPA recommendation.	14.
Exceptions: VOA, Coliform O3G, WI-DRO (water)	Initial when Lot # of added completed preservative
Trip Blank present:	
Pace Trip Blank lot # (if purchased):	15.
Headspace in VOA vials (>6mm): □Yes □No ☑N/A	
	16.
Project sampled in USDA Regulated Area: □Yes □No ᢓŃ/A	17. List State:
Additional labels attached to 5035A vials in the field?	18.
Client Notification/ Resolution: Copy COC to Client? Y /	N Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
A V	Date: 8-9-16
Project Manager Review:	Date: 8-9-10



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section Required	A Client Information:	Section B Required Proj							i ecti o nvoice	on C Inform	nation:								-					Pag	e:		0			
Company	EarthCon Site Services Inc	Report To: SI	herri Ha	arvey				A	ttenti:	on:	She	ni Ha	arvey	!						***/\.										
Adoress:	1880 W Oak Pkwy Bldg 100 Ste 106	Copy To: Lo	orenzo	Pittsley (I	orenzow	vp3@yaho	o.com)	C	оттре	ny Na	ne: E	arth	Con	Site S	servi	ces l	nc		RE	GUL	ATC	RY.	AGE	NCY	•			, (1)		
	Marietta GA 30062	Al	lison Le	vinson (a	alevinso	n@earthco	on.com)	A	ddres	ss:									F	NP	DES		G	ROUN	ND W	ATER	. r .	RINKING	WATER	:
Email To:	sharvey@earthcon.com	Purchase Ord	er No.:				 		ace Cu				*******				•••••		7	US	T		R	CRA			T 0	THER		
Phone:	770-973-2100 Fax: 770-973-7395	Project Name:	SW	Monthly (001/002			P	ace Pr lenaçe	roject	Truc	y Gi	pson	913	-563-	140	5		Si	te Lo	catio	nc			į.	V				
Request	ed Due Date/TAT: STANDARD	Project Number	er: Inte	mational I	Paper	Joplin, MC)			rofile #.	849	3 Lin	ne 1				***************************************		1	ş	TATI	E:		Misso	un	- 1/2				
<u></u>		1														R	eque	sted	Ana	lysi	s Fili	erec	d (Y)	N)	E					
	Section D Valid Matrix	Cories						Т	П	`	***************************************				N N		T	Т		П	T	T	Т							
	Required Client Information DRINKING WATER WATER WASTE WATER PRODUCT SOLUSOLID	CODE DW WT	(G=GRAB C=COMP)	COMPS STAI	OSITE	COMPO ENC/G	SITE RAB	COLLECTION			Pres	ervat	tives							anthracene)				- B		(N/E)				
ITEM#	SAMPLE ID WPE AR (A-Z, 0-9 / -) Sample IDS MUST BE UNIQUE TISSUE	AR OT TS	MATRIX CODE (30 SAMPLE TYPE (G=C	DATE	TIME	DATE		LE TEMP AT	# OF CONTAINERS	Unpreserved H.SO.	HNO3	NaOH	Na ₂ S ₂ O ₃	Methanol	Analysis Test	୦୫୦	Shenois Settle Children	settieadie Solids otal Recoverable Zinc		270 SIM (Dibenz(a,h)anth	1613 Dioxin**	Jissofved Zinc				Residual Chlorine		757 Project No		I.D.
	OUTFALL 001		NT G	XXX	XXX	3/16	1606	十		14 1	-	2		= =		X		x >		χ.			The	Ja				13×34° علاقة		CUI
1 2	OUTFALL 002		WT G	×××	XXX	3/7/16		1	i	-	+	2	$\dagger \dagger$	1	1	×		x ,	1		Х	×	174	1 00		44 3	ALAS F	لاس حرابا	03·2)	az
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	ADDITIONAL COMMENTS	•	RELINQU	IISHED BY	/ AFFILIA	TION	DATE			IME			AC	CEPTI	ED BY	/ I AF	FILLAT	ION			DATE		ŦI	ME		13.5	SAMPL	E CONDITIO	NS	
	chthene - Indeno(1,2,3-cd)pyrene - Pentachiorophenoi threne - Pyrene	Lore	NZ	, Piti	s/ev	7	81816	5	15	00	_	5		> ~		<i></i>	10	1451		18/4	di		045	0	Į,	4	4	4-	•	4
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Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414

Phone: 612.607.1700 Fax: 612.607.6444

Report Prepared for:

Trudy Gipson **PACE Kansas** 9608 Loiret Blvd Lenexa KS 66219

> **REPORT OF** LABORATORY **ANALYSIS FOR** PCDD/PCDF

Report Information:

Pace Project #: 10358615

Sample Receipt Date: 08/10/2016

Client Project #: 60225218

Client Sub PO #: N/A

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

August 25, 2016

Scott Unze, Project Manager

(612) 607-6383

(612) 607-6444 (fax)

scott.unze@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

Page 27 of 41

Report Prepared Date:

August 25, 2016



Pace Analytical Services, Inc. 1700 Elm Street

Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Pace Analytical Services, Inc. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) using USEPA Method 1613B. Per request, the reporting limits were set to 4.4 pg/L.

The recoveries of the isotopically-labeled PCDD internal standards in the sample extracts ranged from 70-96%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners were based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs at the reporting limits.

Laboratory and matrix spike samples were also prepared using clean reference matrix or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 84-119% with relative percent differences of 0.2-8.1%. These results were within the target ranges for the method.

REPORT OF LABORATORY ANALYSIS



Tel: 612-607-1700 Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	NE-OS-18-06
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q

REPORT OF LABORATORY ANALYSIS

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Report No.....10358615 Page 29 of 41

Page 3 of 15

Appendix A

Sample Management

Chain of Custody

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/ Pace Ana		
103547	73	3.co r 7

Repo **Workorder:** 60222793 Workorder Name: SW Monthly 001/002 Owner Received Date: 7/6/2016 Results Requested By: 7/28/2016 Report To Subcontract To Requested Applysis Trudy Gipson Pace Analytical Minnesota Pace Analytical Kansas 1700 Elm Street 39608 Loiret Blvd. Suite 200 Lenexa, KS 66219 Minneapolis, MN 55414 Phone (913)599-5665 Phone (612)607-1700 Preserved Containers 1613 Dioxin Sample Collect LAB USE ONLY Date Time Lab ID Mahrix Item Sample ID MOI RQS 4 X **OUTFALL 001** 7/4/2016 10:45 60222793001 Water 002 OUTFALL 002 2 X 7/4/2016 11:45 60222793002 Water 3 4 Report only Dioxins Date/Time Received Date/Time Transfers Released By Run QC on 60222793001 7/7/IC 1000 Need 4.4 pg/L Need EDD 2 Samples Intac@or Custody Seal Y or N Received on Ice (Yor N **Cooler Temperature on Receipt** N

^{***}In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name: Sample Condition Upon Receipt Form Document No.: F-MN-L-213-rev.16

Document Revised: 04Apr2016
Page 1 of 1
Issuing Authority:
Pace Minnesota Quality Office

Courier: Commercial Tracking:Number:	Pace Ka □Fed Ex □Pace □Pace	NSAS □UPS □SpeeDee 47 4210	USPS Other:		Client	10358615
•	poler/Box Present?		10/16	Soale Int	tact?	Yes Zivo Optional: Proj. Due Date: Proj. Name:
		_				
Packing Material:	Bubble Wrap	Bubble Bags	Non	e [_]	Other:	Temp Blank? Yes No
_] 151401163] 151401164	☐B88A91216750 ☐B88A01433100	IVD	e of Ice:	Ø₩e	et 🔲 Blue 📉 None 🦳 Samples on ice, cooling process has begun
ld samples originate IS, NC, NM, NY, OK,	ve freezing to 6°C I (N/A, water sar in a quarantine zone OR, SC, TN, TX or VA	within the United : (check maps)?	tor: 10	AR, AZ, C	Dat A, FL, GA, □Yes	Biological Tissue Frozen?
						COMMENTS:
Chain of Custody Pr	esent?		ZÎYes	No	□N/A	1.
Chain of Custody Fil	led Out?		Yes	□No	□N/A	2.
Chain of Custody Re	linguished?		ZYes	□No	□N/A	3.
Sampler Name and/	or Signature on COC		Yes	No	□N/A	4.
Samples Arrived wit	hin Hold Time?		⊘ Yes	□No	□n/a	5.
Short Hold Time An	alysis (<72 hr)?	· · · · · · · · · · · · · · · · · · ·	☐Yes	No	□N/A	6.
Rush Turn Around 1	ime Requested?		∐Yes	ØNo	□n/a	7.
Sufficient Volume?		· .	☑Yes	No	∏N/Ä	8.
Correct Containers (Jsed?		Z Yes	□No	□n/a	9.
-Pace Containers	Used?		✓Yes	□ No	□N/A	
Containers Intact?	·		∕ZiYes	□No	□n/a	10.
iltered Volume Rec	eived for Dissolved T	ests?	□Yes	□No	ØN/A	11. Note if sediment is visible in the dissolved container
Sample Labels Matc	1 COC?		ZYes	□No	□N/A	12.
	ne/ID/Analysis Mat					
checked?	ng acid/base preserva ng preservation are fo		∐Yes	□No	⊠N/A	13. ☐HNO₃ ☐H₂SO₄ ☐NaOH ☐HCI Sample #
ompliance with EPA HNO3, H25O4, HCl<2	recommendation? ; NaOH >9 Sulfide, Na	OH>12 Cyanide)	∐Yes	□No	⊠n/a	
exceptions: VOA, Co DRO/8015 (water) D	iform, TOC, Oil and O OC	ii 2450,	∐Yes	□No	ØN/A	Initial when Lot # of added completed: preservative:
leadspace in VOA V			 □Yes	□No	ZIN/A	
rip Blank Present?			Yes	□No	Z]N/A	15.
rip Blank Custody S	eals Present?		□Yes	□No	ØN/A	
ace Trip Blank Lot #	(If purchased):					
CLIENT (OTIFICATION/RESC	LUTION				Field Data Required? Yes No
Person Contacted:		·				Date/Time:
Comments/Resolut	on:					
	nager Review:	San (Mu			Date: 08/10/16



Tel: 612-607-1700 Fax: 612- 607-6444

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By

CCal Filename(s)

Method Blank ID

60225218001 Y160823B_08 **SMT Total Amount Extracted** 965 mL NA % Moisture **Dry Weight Extracted** NA ICÁL ID

OUTFALL 001

Matrix Water Dilution NA Collected 08/07/2016 16:00

08/10/2016 09:45 Y160816A Received Y160823A 14 **Extracted** 08/17/2016 11:10 **BLANK-51575** 08/24/2016 00:06 Analyzed

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C	2.00	87 72
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C	2.00 2.00 2.00 2.00	84 70 93
1,2,3,4,7,8-HxCDD		7.5	4.4 U	OCDD-13C	4.00	75
1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 33.0	7.1	4.4 IJ 4.4 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	210.0 420.0		4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	85
OCDD	2300.0		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

J = Estimated value A = Reporting Limit based on signal to noise

I = Interference present

ND = Not Detected

NA = Not Applicable

NC = Not Calculated



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Sample Analysis Results

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename Injected By

OUTFALL 002 60225218002 Y160823B 09 SMT

Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID

CCal Filename(s) Method Blank ID

960 mL NA NΑ Y160816A Y160823A_14

BLANK-51575

Matrix Water Dilution NA Collected

08/07/2016 15:00

08/10/2016 09:45 Received Extracted 08/17/2016 11:10 Analyzed 08/24/2016 00:48

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	88 80 84
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	74 96 87
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 7.6	<u>-</u>	4.4 4.4 4.4 4.4 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	 ND	52	4.4 U 4.4	2,3,7,8-TCDD-37Cl4	0.20	87
OCDD	700.0		4.4			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration RL = Reporting Limit

ND = Not Detected NA = Not Applicable NC = Not Calculated

J = Estimated value

A = Reporting Limit based on signal to noise

I = Interference present



Tel: 612-607-1700 Fax: 612-607-6444

Method 1613B Blank Analysis Results

Lab Sample ID Filename **Total Amount Extracted**

ICAL ID

CCal Filename(s)

BLANK-51575 Y160822B_15 1040 mL Y160816A Y160822A_08

Matrix Dilution Water NA

Extracted Analyzed

08/17/2016 11:10 08/23/2016 03:53

Injected By BAL

Native Isomers	Conc pg/L	EMPC pg/L	RL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	ND ND		4.4 4.4	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	81 63 83
1,2,3,7,8-PeCDD Total PeCDD	ND ND		4.4 4.4	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	69 78 60
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	ND ND ND		4.4 4.4 4.4	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND ND		4.4 4.4 4.4	2,3,7,8-TCDD-37Cl4	0.20	· 88
OCDD	******	15	4.4 IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

J = Estimated value

I = Interference present



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Laboratory Control Spike Results

Lab Sample ID
Filename
Total Amount Extracted
ICAL ID
CCal Filename
Method Blank ID

LCS-51576 Y160822B_16 1040 mL Y160816A Y160822A_08 BLANK-51575

Matrix Dilution Extracted

Water NA

Extracted 08/17/2016 11:10 Analyzed 08/23/2016 04:36

Injected By BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.	
2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD	10 50 50 50 50 50 100	8.4 48 55 53 52 50 100	6.7 35.0 35.0 38.0 32.0 35.0 78.0	15.8 71.0 82.0 67.0 81.0 70.0 144.0	84 95 110 106 104 100	
2,3,7,8-TCDD-37Cl4 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	10 100 100 100 100 100 200	8.6 88 66 86 86 88 120	3.1 20.0 21.0 21.0 25.0 26.0 26.0	19.1 175.0 227.0 193.0 163.0 166.0 397.0	86 88 66 86 86 88 59	

Cs = Concentration Spiked (ng/mL)

Cr = Concentration Recovered (ng/mL)

Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision

R = Recovery outside of control limits

Nn = Value obtained from additional analysis

^{* =} See Discussion



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID Filename

Filename
Total Amount Extracted
ICAL ID

CCal Filename(s) Method Blank ID OUTFALL 001-MS 60225218001-MS F160823A_01

979 mL F160822 F160822B_15 BLANK-51575 Matrix Dilution

Water NA

Extracted
Analyzed
Injected By

VA 18/17/2016 1

08/17/2016 11:10 08/23/2016 06:03

		_	
•	~~*~~	D.,	ואט
н	ected	DV	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.18	91	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	99 104 86
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.94	94	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00	80 106 99
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.08 1.20 1.15	108 120 115	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.19	119	2,3,7,8-TCDD-37Cl4	0.20	90
OCDD	2.00	4.30	215			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

J = Estimated value I = Interference present



Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - PACE Kansas

Client's Sample ID Lab Sample ID OUTFALL 001-MSD 60225218001-MSD

Filename
Total Amount Extracted

Method Blank ID

F160823A_02 959 mL

Matrix Water Dilution NA

Total Amount Extracted ICAL ID CCal Filename(s)

F160822 F160822B_15

BLANK-51575

Dilution Extracted Analyzed

08/17/2016 11:10 08/23/2016 06:54

Injected By BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDD Total TCDD	0.20	0.17	84	2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	98 104 84
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.96	96	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00	75 103 98
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.05 1.19 1.16	105 119 116	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
Total HxCDD 1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.19	119	2,3,7,8-TCDD-37Cl4	0.20	98
OCDD	2.00	4.35	217			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

J = Estimated value I = Interference present <u> Pace Analytical</u>™

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

Tel: 612-607-1700 Fax: 612- 607-6444

Method 1613 Spike Sample Results

Client - PACE Kansas

Client Sample ID Lab Sample ID MS ID MSD ID

OUTFALL 001 60225218001 60225218001-MS 60225218001-MSD

Sample Filename MS Filename MSD Filename

Y160823B_08 F160823A_01 F160823A_02

Dry Weights Sample Amount MS Amount MSD Amount

NA NA NA

	Sample Conc.	MS/MSD Qs MS Qm MSD		MSD Qm		Background Subtracted		
Analyte	pg/L	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDD	0.000	0.20	0.18	0.17	8.1	91	84	8.1
1,2,3,7,8-PeCDD	0.000	1.00	0.94	0.96	2.1	94	96	2.1
1,2,3,4,7,8-HxCDD	0.000	1.00	1.08	1.05	2.9	107	104	2.9
1,2,3,6,7,8-HxCDD	0.000	1.00	1.20	1.19	1.0	119	118	1.0
1,2,3,7,8,9-HxCDD	0.000	1.00	1.15	1.16	0.7	115	116	0.7
1,2,3,4,6,7,8-HpCDD	208.543	1.00	1.19	1.19	0.2	99	99	0.2
OCDD	2316.916	2.00	4.30	4.35	1.0	102	106	4.2

Definitions

Definitions
MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin CDF = Chlorinated dibenzo-p-furan

T = Tetra Pe = Penta Hx = Hexa Hp = Hepta O = Octa





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Memorandum

DATE:

January 18, 2017

TO:

Alison Levinson

FROM:

Mary Ann Brookshire

SUBJECT:

Quality Assurance Review

PROJECT:

International Paper Joplin, Missouri Facility

SAMPLING DATES:

Stormwater Samples Collected March to August 2016

PROJECT NUMBER:

02.20000003.16

SDG NUMBERS:

60214598, 60216780, 60219255, 60222195, 60222793,

60225218

1.0 Introduction

This memorandum presents the cursory validation of the results of stormwater samples collected at International Paper's wood treating facility located in Joplin, Missouri. Twelve water samples were collected from March to August 2016. The polychlorinated dibenzodioxins (PCDDs) analyses were performed by Pace Analytical Services, Inc., located in Minneapolis, Minnesota. The metals, semivolatile organic compounds (SVOCs), and general chemistry parameter analyses were performed by Pace Analytical Services' Lenexa, Kansas laboratory. The samples were analyzed in accordance with the methods listed in the Table 1.

The criteria used to qualify data are from the *Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 2008) and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA 2010), the *National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (USEPA 2008), the analytical methods, or the professional judgment of the validation chemist. The following laboratory deliverables were reviewed during the validation process:

- Chain-of-custody (COC) documentation to assess holding times and verify report completeness
- Laboratory quality control (QC) sample results, including method blanks, surrogate spikes, laboratory control samples (LCS), matrix spike/matrix spike duplicates (MS/MSD), and laboratory duplicates

X

X

X

X

X

X

X

X

X

Analytical results to verify reporting limits

The qualified data are summarized in Section 5.0. Data qualifiers have been added to the sample results in the laboratory reports used for validation. In addition, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness are evaluated.

PCDD^d Total Zincb Wet Chem^c SVOC^a **Date Sampled Laboratory ID** Sample ID X 60214598001 Outfall 001 3/9/16 X X X X X 60214598002 X 3/9/16 Outfall 002 X X X X 4/11/16 60216780001 Outfall 001 \mathbf{X} \mathbf{X} X \mathbf{X} 60216780002 4/11/16 Outfall 002 X X X X 60219255001 Outfall 001 5/16/16 X X X 60219255002 X Outfall 002 5/16/16 X X X X 60222195001 Outfall 001 6/24/16 X X X X Outfall 002 6/24/16 60222195002 X X X X

Table 1—Sample Data Reviewed

X

X

X

60222793001

60222793002

60225218001

60225218002

Data Validation Findings 2.0

7/4/16

7/4/16

8/7/16

8/7/16

Outfall 001

Outfall 002

Outfall 001

Outfall 002

Custody, Preservation, and Completeness 2.1

Sample custody was maintained from sample collection to receipt at the laboratory. The reports are complete and contain results for the samples and tests requested on the COC forms. The samples were received intact and were properly preserved. Sufficient sample volume was received to perform the requested analyses.

Semivolatile Organic Analyses by Methods 625 and 8270C SIM 2.2

2.2.1 Holding Times

The samples were extracted within the required holding time of 7 days from collection. The sample extracts were analyzed within the required holding time of 40 days from extraction.

^a SVOC analysis: acenaphthene, indeno(1,2,3-cd)pyrene, pentachlorophenol, phenanthrene, and pyrene by Method 625 (USEPA 1999a) and dibenz(a,h)anthracene by Method 3510/8270C selective ion monitoring (SIM) (USEPA

^b Total and dissolved zinc by Method 6010 (USEPA 1996)

^c Oil and grease by Method 1664A (USEPA 1999a), total recoverable phenolics by 420.1 (USEPA 1999a), and total settleable solids by Method 2540F (APAH 1998)

^d Polychlorinated dibenzodioxin analysis by Method 1613B (USEPA 1999a)

2.2.2 Blank Analyses

2.2.2.1 Method Blanks

Method blanks were analyzed at the required frequency of one per extraction batch. Target analytes were not detected above the reporting limits in the method blank samples.

2.2.2.2 Field Blanks

Field blanks were not collected with the samples.

2.2.3 Surrogate Analyses

Surrogate compounds were added to the samples, blanks, and QC samples as required. The recovery values are within the laboratory QC limits.

2.2.4 Matrix Spike/Matrix Spike Duplicate Sample Analyses

MS and MS/MSD pairs were analyzed at the required frequency and the recovery and relative percent difference (RPD) values are within laboratory QC limits.

2.2.5 Laboratory Control Sample Analyses

LCS samples were analyzed at the required frequency of one per extraction batch. The recovery values are within laboratory QC limits.

2.2.6 Laboratory Reporting Limits

The Permit specified limit for pentachlorophenol in stormwater is $5.3 \mu g/L$. The reporting limit exceeds the Permit limit; however, the method detection limit (MDL) for pentachlorophenol is below the Permit limit.

2.2.7 Field Duplicates

Field duplicates were not collected with the samples.

2.2.8 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Upon consideration of the information presented here, the data are acceptable without qualification.

2.3 Metals Analyses

2.3.1 Holding Times

The samples were analyzed within the required holding time of 180 days from collection.

2.3.2 Blank Analyses

2.3.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected in the method blank samples.

2.3.2.2 Field Blanks

Field blanks were not collected with the samples.

2.3.3 Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSDs were analyzed as required. The recovery and RPD values are within the laboratory QC limits.

2.3.4 Laboratory Control Sample Analyses

LCS samples were analyzed at the required frequency of one per digestion batch. The recovery values are within the Functional Guidelines criteria of 80 to 120 percent.

2.3.5 Laboratory Reporting Limits

The Permit specified limit for dissolved zinc in stormwater is 0.168 mg/L. The reporting limit is 0.050 mg/L, which is below the Permit limit.

2.3.6 Field Duplicates

Field duplicates were not collected with the samples.

2.3.7 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Based upon the information presented here, the data are acceptable without qualification. The laboratory noted that the dissolved zinc concentration for sample Outfall 002 in the August sampling event was higher than the total result, but within their QC limits. The laboratory applied (D9) qualifier was removed from the data.

2.4 General Chemistry Analyses

2.4.1 Holding Times

The total recoverable phenolics and oil and grease analyses were performed within the method-required holding time of 28 days from collection. The total settleable solids analyses were performed within the EPA holding time of 48-hours from collection (USEPA 2007).

2.4.2 Blank Analyses

2.4.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected in the method blanks.

2.4.2.2 Field Blanks

Field blank samples were not collected with the samples.

2.4.3 Matrix Spike Analyses

Matrix spike analyses were performed at the required frequency of one per batch. The recovery values are within the laboratory control limits with the following exceptions.

- The oil and grease MS recovery value associated with the March 2016 samples exceeds the laboratory QC limits of 78 to 114 percent. Data were not qualified as the spiked sample was not from the Joplin site and does not represent the sample matrix.
- The oil and grease MS recovery value associated with the April 2016 samples exceeds the laboratory QC limits of 78 to 114 percent. Data were not qualified as the spiked sample was not from the Joplin site and does not represent the sample matrix.
- The oil and grease MS recovery value associated with the June 2016 samples is 56 percent, which is below the laboratory QC limits of 78 to 114 percent. The associated sample results are qualified as estimated detection limit (UJ) and may be biased low.
- The phenolics MS recovery value associated with the August 2016 samples is 112 percent, which exceeds the laboratory QC limits of 90 to 110 percent. The associated sample result for Outfall 001 is qualified as estimated (J) and may be biased high.

2.4.4 Laboratory Duplicate Analyses

Sample duplicates were analyzed as required. The RPD values are within the laboratory QC limits with the following exception.

• The RPD for oil and grease associated with the August 2016 samples exceeds the laboratory QC limits. Data were not qualified as the duplicate sample was not from the Joplin site and does not represent the sample matrix.

2.4.5 Laboratory Control Sample Analyses

LCS samples were analyzed as required for the total recoverable phenolics and oil and grease analyses. The percent recovery values are within the laboratory QC limits.

2.4.6 Laboratory Reporting Limits

The Permit specified limit for total settleable solids and oil and grease in stormwater are 2.5 mL/L/hr and 15 mg/L, respectively. The reporting limits are 0.2 mg/L/hr and 5.0 mg/L, which are below the Permit limits.

2.4.7 Field Duplicates

Field duplicates were not collected with the samples.

2.4.8 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Based upon the information presented here, the data are acceptable with qualification.

2.5 Polychlorinated Dibenzodioxin Analyses

2.5.1 Holding Times

The samples were extracted and analyzed within the Method 1613B holding time of one year from collection.

2.5.2 Method Blank Analyses

Method blanks were analyzed at the required frequency of one per extraction batch. Polychlorinated dibenzodioxins were not detected in the method blanks after qualification for interferences (see Section 2.5.8).

2.5.3 Internal Standard Analyses

Internal standards, including the cleanup standard, were added to the samples, blanks, and QC samples as required. The recoveries were with the Method 1613B Table 7 criteria.

2.5.4 Laboratory Control Sample Analyses

LCS samples were analyzed at the required frequency of one per extraction batch. The recovery values are within Method 1613B Table 6 criteria.

2.5.5 Matrix Spike/Matrix Spike Duplicate

MS/MSD analyses were reported at the required frequency and the recovery and RPD values are within laboratory QC limits with the following exceptions.

- The 1,2,3,7,8,9-HxCDD MS recovery value for Outfall 001 associated with the March 2016 sampling event is 132 percent, which exceeds the laboratory QC limits of 70 to 130 percent. Data were not qualified as the recovery value in the associated MSD sample was within the laboratory QC limit and a trend was not identified.
- The 1,2,3,4,6,7,8-HpCDD MS and MSD recovery values associated with the March 2016 sampling event are 166 and 144 percent, respectively, which exceed the laboratory QC

limit. The associated sample result for sample Outfall 001 is qualified as estimated (J) and may be biased high.

- The OCDD MS and MSD recovery values associated with the March 2016 sampling event are 453 and 228 percent, which exceed the laboratory QC limit. The RPD value is 66, which also exceeds the laboratory QC limit. The associated OCDD result for sample Outfall 001 is qualified as estimated (J).
- The OCDD MSD recovery value associated with the April 2016 sampling event is 287 percent, which exceeds the laboratory QC limit. The RPD value is 80, which also exceeds the laboratory QC limit. The associated OCDD result for sample Outfall 001 is qualified as estimated (J) based on the RPD.
- The OCDD recovery values in Outfall 001 MS and MSD associated with the May 2016 sampling event are 44 and 0 percent, which are below the laboratory QC limits of 70 to 130 percent. Data were not qualified as the OCDD concentration in the spiked sample was high and overwhelmed the spike concentration.
- The OCDD recovery values in Outfall 001 MS and MSD associated with the June 2016 sampling event are 32 and 105 percent, which are outside of the laboratory QC limits of 70 to 130 percent. Data were not qualified as the OCDD concentration in the spiked sample was high and overwhelmed the spike concentration.
- The OCDD recovery value in Outfall 001 MS associated with the July 2016 sampling event is 131 percent, which exceeds the laboratory QC limits of 70 to 130 percent. Data were not qualified as the OCDD recovery value in the MSD sample was within the laboratory QC limit and a trend was not identified.

2.5.6 Laboratory Reporting Limits

The Permit specified limit for 2,3,7,8-TCDD in stormwater is 4.4 pg/L. The reporting limits of the polychlorinated dibenzodioxins are 4.4 pg/L, which meet the Permit limits.

2.5.7 Field Duplicates

Field duplicates were not collected with the samples.

2.5.8 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Based upon the information presented here, the data are acceptable with qualification. The following addresses additional items observed during the data validation:

• EMPCs were reported for 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD in sample Outfall 001 in March 2016 to indicate that the ion abundance ratio criterion had not been met. In accordance with USEPA Region 4 SOP (USEPA 2014), the EMPC values are reported as undetected (U).

- An EMPC was reported for 1,2,3,6,7,8-HxCDD in sample Outfall 002 in July 2016 to indicate that the ion abundance ratio criterion had not been met. In accordance with USEPA Region 4 SOP (USEPA 2014), the EMPC value is reported as undetected (U).
- EMPCs were reported for 1,2,3,4,7,8-HxCDD and 1,2,3,6,7,8-HxCDD in sample Outfall 001 in August 2016 to indicate that the ion abundance ratio criterion had not been met. In accordance with USEPA Region 4 SOP (USEPA 2014), the EMPC values are reported as undetected (U).
- EMPCs were reported for 1,2,3,4,6,7,8-HpCDD in sample Outfall 002 in August 2016 to indicate that the ion abundance ratio criterion had not been met. In accordance with USEPA Region 4 SOP (USEPA 2014), the EMPC value is reported as undetected (U).
- An EMPC was reported for OCDD in the method blank associated with the August 2016 samples. In accordance with USEPA Region 4 SOP (USEPA 2014), the EMPC value is reported as undetected (U).

3.0 Assessment of Data Quality Indicators

3.1 Precision

Precision is a measure of the mutual agreement among individual measurements of the same property, under prescribed similar conditions. Precision is determined through analysis of MS/MSDs, sample duplicates, and field duplicate samples. Duplicate samples are evaluated for precision in terms of relative percent difference. Relative percent difference is defined as the difference between the duplicate results divided by the mean and expressed as a percent.

The precision of the SVOC, metals, PCDDs, and general chemistry data is good. The RPD values for the site-specific MS/MSDs and matrix duplicates are within the laboratory QC limits with exceptions. Two RPD values between the MS and MSD for OCDD were high resulting in qualification of the associated data as estimated.

3.2 Accuracy

Accuracy is the degree of agreement between a measurement and the accepted reference or true value. The level of accuracy is determined by examination of surrogates, MS/MSDs, LCSs, method blanks, and field blanks. The surrogate, matrix spike, and LCS recovery values were compared to the laboratory QC limits. Method and field blanks are analyzed to identify compounds that could be introduced during the sampling, extraction, or analysis phases (i.e., laboratory contaminants) and lead to inaccurate results.

The accuracy of the SVOC, metals, PCDDs, and general chemistry data is acceptable. LCS, site-specific MS/MSD samples, and surrogate recoveries are within the laboratory QC limits with exceptions. The recovery of one site-specific MS for the phenolics analyses exceeded QC limits. The associated sample result was qualified as estimated and may be biased high. The recovery value of oil and grease for one MS was low resulting in qualification of the data as estimated

detection limit; this data may be biased low. Several MS and/or MSD values were outside the QC limits for the PCDD samples. Associated sample results that were impacted were qualified as estimated. The method blanks are free of contamination.

3.3 Representativeness

Representativeness is the extent to which the data reflect the actual contaminant levels present in the samples. Representativeness is assessed through method and field blanks, and proper preservation and handling. Method and field blank analyses allow for the detection of artifacts that may be reported as false positive results. Proper sample preservation and handling are necessary so that sample results reflect the actual sample concentrations.

The data are assumed to be representative because the samples were properly preserved and handled and target analytes were not detected in the method blanks.

3.4 Comparability

Comparability is a measure of how easily the data set can be compared and combined with other data sets. The data are assumed to be comparable since standard EPA methods were used to analyze the samples, the method QC criteria were generally met, and routine detection limits were reported.

3.5 Completeness

Completeness is expressed as the ratio of valid results to the amount of data expected to be obtained under normal conditions. Completeness is determined by assessing the number of samples for which valid results were obtained versus the number of samples that were submitted to the laboratory for analysis. Valid results are results that are determined to be usable during the data validation review process.

The completeness of this data set is 100 percent.

4.0 Data Qualifier Definitions

The following data validation qualifiers were used in the review of this data set. These qualifiers are from the Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1999).

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

5.0 SUMMARY OF QUALIFIED DATA

The following sample results were qualified during the quality assurance review of this data set.

Sample ID	Analyte	Qualifier	Reason for Qualification
Outfall 001 (60222195)	Oil and Grease	UJ	MS recovery < QC limits
Outfall 001 (60225218)	Phenolics	J	MS recovery > QC limits
Outfall 001 (60214598)	1,2,3,4,6,7,8-HpCDD	J	MS/MSD recoveries > QC limits
Outfall 001 (60214598)	OCDD	J	MS/MSD recoveries and RPD > QC limits
Outfall 001 (60216780)	OCDD	J	MS/MSD RPD > QC limits
Outfall 001 (60214598)	1,2,3,6,7,8-HxCDD	U at EMPC	Ion abundance criteria not met
Outfall 001 (60214598)	1,2,3,7,8,9-HxCDD	U at EMPC	Ion abundance criteria not met
Outfall 002 (60222793)	1,2,3,6,7,8-HxCDD	U at EMPC	Ion abundance criteria not met
Outfall 001 (60225218)	1,2,3,4,7,8-HxCDD	U at EMPC	Ion abundance criteria not met
Outfall 001 (60225218)	1,2,3,6,7,8 -HxCDD	U at EMPC	Ion abundance criteria not met
Outfall 002 (60225218)	1,2,3,4,6,7,8-HpCDD	U at EMPC	Ion abundance criteria not met

EMPC – estimated maximum possible concentration

MRL - method reporting limit

6.0 References

APHA. 1998. Standard Methods for the Examination of Water and Wastewater, 20th Edition. American Public Health Association.

USEPA. 1983. Methods for Chemical Analysis of Water and Waste EPA/600/4-79/020. United States Environmental Protection Agency. Office of Research and Development. March 1983.

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USEPA. 1999b. Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material by Extraction and Gravimetry EPA-821-R-98-002. United States Environmental Protection Agency. Office of Water. February 1999.

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USEPA. 2008. Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency Office of Emergency and Remedial Response. EPA540/R-99/008. October 1999.

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USEPA. 2007. 40 CFR Part 122, 136, et al. Federal Register Volume 72 No. 47, March 12, 2007.

USEPA. 2014. Data Validation Standard Operating Procedures for Chlorinated Dioxin/Furan Analysis. U.S. Environmental Protection Agency Region 4, Science and Ecosystem Support Division, Management and Technical Services Branch, Quality Assurance Section. February 2014.

	SAMPLING LOCAT	ON: IP-Joplin	Facility	SAMPLE NO.	001
	SAMPLING DATE:	NO	Ne -	lanuary	
	SAMPLING TIME:			AM/PM	
	TIME RAIN EVENT	STARTED:		AM/PM	
REASON FOR SA	MPLING:	REGULAR SAI SPECIAL SAM			
WEATHER:		TE	EMPERATURE:		
WATER FLOW C	ONDITIONS (standing	, movement, fast,	slow):		
- potable - water ri	water and phosphate-fr water rinse	eionized	Labora	Equipment Clear ontainer Cleaning atory Certified Conta Cleaned Containers	
OBSERVATIONS	OF WATER:	* :-			
Appeara	nce:				
Odor: Depth:		Width:		Velocity:	
Other Co	omments:				
ON-SITE MEASU Tempera pH Conducti Water Le Other	ivity			ment	Libration Date
CONTAINER HA	NDLING: Sid	les Labeled	_ Lids Taped	Samples Pac	ked in Ice
bottom depo	free from substances in osits or prevent full mai free from oil, scum and e of beneficial uses?	ntenance of benef	icial uses? sufficient amoun	no yes	
maintenance				the color or turbidite	effective ador or
(3) Are waters	free from substances in maintenance of benefic				offensive odor of
(3) Are waters in prevent full		cial uses? no	o yes		
(3) Are waters a prevent full (4) Are waters a waste?	maintenance of benefic	cial uses? no	es, demolition deb	oris, used vehicles or	equipment and solid
(3) Are waters a prevent full (4) Are waters a waste? (5) Is the area s	free from used tires, canno yes	cial uses? no	es, demolition deb	oris, used vehicles or ment accumulation?	equipment and solid
(3) Are waters a prevent full (4) Are waters a waste? (5) Is the area s	free from used tires, can no yes surrounding waters free evidence of leachate o	cial uses? no	es, demolition deb	oris, used vehicles or ment accumulation?	equipment and solid

	SAMPLING LOCATION	N: <u>IP-Joplin</u>	Facility	_SAMPLE NO	. 00 =	_
	SAMPLING DATE: _	NONE	2 Jane	vary		_
	SAMPLING TIME:			_AM/PM		
	TIME RAIN EVENT ST	ARTED:		AM/PM		
REASON FOR SAM		REGULAR SAN PECIAL SAMI		<u> </u>		
WEATHER:		TE	MPERATURE:			
WATER FLOW CO	ONDITIONS (standing, n	novement, fast, s	low):			
- potable v - water rir - solvent r	water and phosphate-free water rinse	nized	Laborat	Equipment Cl ntainer Cleaning ory Certified Co leaned Containe	g ontainers	
- air dry			Field C.	leaned Containe		
OBSERVATIONS Appearan Odor: Depth: Other Cor		Width:		Velocity:		
ON-SITE MEASUR Temperat pH Conductiv Water Le	vity		Measur Instrum F/C		Calibration Date	
CONTAINER HAN	NDLING: Sides	Labeled	Lids Taped	Samples I	Packed in Ice	
bottom depos (2) Are waters fi	ree from substances in su sits or prevent full mainte ree from oil, scum and flo of beneficial uses?	nance of benefic	cial uses? r	no yes		armful
	ree from substances in su maintenance of beneficia		to cause unsightly	y color or turbid	ity, offensive odor	or
(4) Are waters fr waste?	ree from used tires, car be	odies, appliance	s, demolition debri	is, used vehicles	or equipment and	l solid
(5) Is the area su	urrounding waters free of	evidence of ero	sion, runoff, sedim	nent accumulation	on? no yes	_
(6) Is there any	evidence of leachate over	flow to surround	ling waters? no	yes		
OTHER COMMEN	NTS:					
SAMPLER'S SIGN	IATURE: Kone	rus T		DAT	TE: 1/29/0	6

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 001
SAMPLING DATE: 2/29/16
SAMPLING TIME:AM/PM
TIME RAIN EVENT STARTED: NOW AM/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: DCV TEMPERATURE: 45
WATER FLOW CONDITIONS (standing, movement, fast, slow):
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse - water rinse: distilled / deionized - solvent rinse: acetone / hexane - air dry Equipment Cleaned: Sample Container Cleaning Laboratory Certified Containers Field Cleaned Containers
OBSERVATIONS OF WATER:
Appearance: Dry Odor: NONE
Depth: Nowe Width: Nowe Velocity: Nowe
ON-SITE MEASUREMENTS: Instrument Date Temperature F/C pH Conductivity Water Level Other One Date Instrument Date
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? (2) Are waters free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? no yes
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes
(5) Is the area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes
(6) Is there any evidence of leachate overflow to surrounding waters? no
OTHER COMMENTS:
SAMPLER'S SIGNATURE: LOCEMON PIRES DATE: 2/29/16

	SAMPLING LOCAT	ION: IP-Joplin Fa	cility	SAMPLE NO. 💆 🗸	2
	SAMPLING DATE:	2/2,91	16		
	SAMPLING TIME:			AM/PM	
	TIME RAIN EVENT	STARTED:		GAM/PM₀	
REASON FOR SAM	IPLING:	REGULAR SAMP SPECIAL SAMPL		- -	
WEATHER:	Dry	TEM	PERATURE:	45	
WATER FLOW CO	/ NDITIONS (standing	, movement, fast, slo	w):	NONO	
- potable v	vater and phosphate-fr vater rinse	•		Equipment Cleaned:	
- water rin - solvent ri - air dry		eionized exane	Laborator	ainer Cleaning ry Certified Containers aned Containers	
OBSERVATIONS O Appearance Odor: Depth: Other Corr	re: D NONE	Width: No.	Ve Ve	locity: <u>NON</u> E	
ON-SITE MEASUR Temperatu pH Conductivi Water Leve	ity	F	Measuring Instrument Instrument	=	n
CONTAINER HAN	DLING: Sid	es Labeled I	ids Taped	Samples Packed in I	ce
bottom deposi (2) Are waters fre	ts or prevent full main	tenance of beneficial	l uses? no . ficient amounts to	on of putrescent, unsigh yes be unsightly or prevent	
(3) Are waters fre prevent full ma	e from substances in s aintenance of benefici		cause unsightly c	olor or turbidity, offensi	ve odor or
(4) Are waters fre waste?	e from used tires, car	bodies, appliances, d	emolition debris,	used vehicles or equipme	ent and solid
(5) Is the area sur	rounding waters free o	of evidence of erosion	ı, runoff, sedimen	t accumulation? no y	res <u>/</u>
(6) Is there any ev	ridence of leachate over	erflow to surrounding	g waters? no Vy	es	
OTHER COMMENT	TS:	77			
	-	·			
SAMPLER'S SIGNA	TURE: Lore	my Pill	sleet	DATE: ス/	29/16

Sı	MPLING LOCATION:	IP-Joplin Facility	SAMPI	ENO. 00/	· · · · · · · · · · · · · · · · · · ·
S.	MPLING DATE:	319116			
S.4	MPLING TIME:	10:46	АМ/РМ	ſ	
T	ME RAIN EVENT STAR	TED: 38/16	2.0.00AM/PM	.	
REASON FOR SAME		ULAR SAMPLING	J		
WEATHER: C/	aud y+ show	Ne/3 Temper	ATURE: 66) 	_
WATER FLOW CON	OFFIONS (standing, move	ment, fast, slow):	Slow		_
	<u>, v%}</u> a4				
Field Equipment Clear - potable wa - potable wa	er and phosphate-free soa	p	Equipm	ent Cleaned:	
- water rinsc		ed :	Sample Container Cle		
- air dry	: acetone / hexane		Laboratory Certification Field Cleaned Con		
OBSERVATIONS OF					
Appearance Odor:	LIEAY	-			-
Depth:	7 Widt	h: 36	Velocity:	800	- -
Other Comn	ents:			***	- - 3 (
ON-SITE MEASURE Temperature pH		F/C _	Measuring Instrument	Calibration Date 9(9//6	- von
Conductivity					- -
Water Level Other	<u></u>				-
CONTAINER HAND	ING: Sides Lab	reled U Lids 7	apedSam	ples Packed in Ice	<u></u>
INSPECTION:	1.5 4.57				
(1) Are waters free bottom deposits	rom substances in sufficient prevent full maintenant	ent amounts to caus se of beneficial uses	e the formation of pu		harmful
(2) Are waters free	rom oil. scum and floatin	g debris in sufficier	at amounts to be unsi	ghtly or prevent full	
maintenance of	eneficial uses? no	yes			
(3) Arc waters free prevent full mai	rom substances in sufficientenance of beneficial uses	ent amounts to caus		urbidity, offensive od	or or
(4) Are waters free	rom used tires, car bodies	s, appliances, demol	ition debris, used vel	nicles or equipment at	nd solid
waste? ne	yes				
(5) Is the area surro	unding waters free of evid	ence of erosion, run	off, sediment accum	ulation? ποyes_ <u>/</u>	<u> </u>
(6) Is there any evid	ance of leachate overflow	to surrounding wat	ers? no Lyes		
OTHER COMMENTS					
	18 18 18 - 18				
SAMPLER'S SIGNAT	URE: Horeny	Pitt	Pag	DATE: 3/9/	6

	SAM	PLING LOCAT	ION: IP-J	oplin Facility	SAM	PLE NO. 002	
i Maria	4 71	LING DATE:	3	to an all the second			
		SANT THE	11:	45		PM = 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	13 1 15 0 12 1	RAM EVENT	STARTED:	3816	AM/	PM:	
HASON	FOR SAMULE	A STATE OF THE STA	*	R SAMPLING	v		
iat 6		inai-bit		SAMPLING			
HEATH	9. <i>Ú</i>		1	TEMPERA	TURE:	04	
		Hills (standing	z. movement,	fast, slow):	5104		
			S. Sandara	A STATE OF THE STA			
Pield Equ	ilpment Clearing	g Steps: and phosphate-f	TPP SOST		Equ	ipment Cleaned:	4
	- potable wastr	rinse	·		1 0 4	Gleenico	
	- water rinse: - solvent rinse:		lelonized exane	S		rtified Containers	~
	- air dry		. i.		Field Cleaned	Containers	
ORSERI	ATIONS OI W	VATER:	045	No.			
0202	Арреагалсе	4	C/ea	<u> </u>			-
	Odor: Depth:	6	Width:	48	Veloci	y: 1000	_ _ ე
	Other Comme	High-			37 :	Calibration	- Dour
ON-SITI	E MEASUREM	ENTS:			Measuring Instrument	Date	- Don
	Temperature	IGC		F/C _		3/9/6	_
	pH Gardenskal	7.21	<i>l</i>	 _			-
	C:Onductivit /						_
د د الو	Conductivit / Water Leve	1					
gill is a	Water Level Other			7.7.7		S. J. Posted in Ice	
CONTA	Water Leve	NG: S	ides Labeled	✓ Lids 7	aped	Samples Packed in Ice	V
a Cast in	Water Level Other	NG: S	ides Labeled	∠ Lids 7	aped	Samples Packed in Ice	~
INSPEC	Water Level Other INER HANDEI TION:	om substances i	n sufficient a	mounts to caus	c the formation	of putrescent, unsightly o	or harmful
INSPEC (1) A	Water Level Other INER HANDEI TION: Are waters free free ottom deposits of	om substances i prevent full ma	n sufficient a aintenance of	mounts to caus beneficial use	e the formation	of putrescent, unsightly o	
INSPEC (1) A b	Water Level Other INER HANDEI TION: Let waters free frottom deposits of the waters free free free free free free free f	om substances i g prevent full ma rom oil, scum an	n sufficient a sintenance of	mounts to caus beneficial use bris in sufficies	e the formation	of putrescent, unsightly o	
INSPEC	Water Level Other INER HANDEI TION: Let waters free frottom deposits of the waters free free free free free free free f	om substances i prevent full ma	n sufficient a sintenance of	mounts to caus beneficial use bris in sufficie	e the formation	of putrescent, unsightly o	
(1) A (2) A (3) A	Water Level Other INER HANDEI TION: Tre waters free frontion deposits of the paintenance of beautiful to the paintenance of	rom substances in prevent full maron oil, scum an eneficial uses?	n sufficient a sintenance of d floating dol no	mounts to caus beneficial uses bris in sufficien yes	c the formation ? no nt amounts to be se unsightly colo	of putrescent, unsightly o	
(1) A (2) A (3) A	Water Level Other INER HANDEI TION: Tre waters free frontion deposits of the paintenance of beautiful to the paintenance of	rom substances in a prevent full ma rom oil, scum an eneficial uses?	n sufficient a sintenance of d floating dol no	mounts to caus beneficial uses bris in sufficient yes	c the formation ? no nt amounts to be se unsightly colo	of putrescent, unsightly of yes which we will unsightly or prevent full	
(1) A (1) A (2) A (3) A	Water Level Other INER HANDEI TION: Tre waters free front deposite of the control of the cont	rom substances in prevent full maren oil, scum an eneficial uses? rom substances in ichance of beneficial uses.	n sufficient a aintenance of d floating del no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficient yes	c the formation ? no nt amounts to be te unsightly color yes	of putrescent, unsightly of yes which we will unsightly or prevent full	odor or
(1) A (2) A (3) A (4) A	Water Level Other INER HANDEI TION: Are waters free from deposite of the paintenance of being the paintenance of the paintenanc	rom substances in prevent full marenesses? rom substances in itenance of beneficial uses.	n sufficient a sintenance of d floating dol no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficient yes mounts to caus no pilances, demo	c the formation ? no nt amounts to be se unsightly color yes	of putrescent, unsightly of yes unsightly or prevent full or or turbidity, offensive of the control of t	and solid
(1) A (2) A (3) A (4) A	Water Level Other INER HANDEI TION: Are waters free from deposite of the paintenance of being the paintenance of the paintenanc	rom substances in prevent full marenesses? rom substances in itenance of beneficial uses.	n sufficient a sintenance of d floating dol no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficient yes mounts to caus no pilances, demo	c the formation ? no nt amounts to be se unsightly color yes	of putrescent, unsightly of yes unsightly or prevent full or or turbidity, offensive of the control of t	and solid
(1) A (2) A (3) A (4) A (5) I	Water Level Other INER HANDEI TION: Tre waters free front and deposits of the maintenance of both are waters free front free waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free front waters free free waters free free waters free front waters free free waters free free waters free free waters free free waters free free waters free free waters free free waters free free waters free free free waters free free free waters free free free free free free free f	rom substances in prevent full mare rom oil, scum an eneficial uses? rom substances in tenance of beneficial used tires. compared tires. comp	n sufficient a sintenance of d floating del no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficien yes mounts to caus no pliances, demo	the formation of the control of the	of putrescent, unsightly of yes unsightly or prevent full or or turbidity, offensive of	and solid
(1) A (2) A (3) A (4) A (5) I (6) I	Water Level Other INER HANDEI TION: Tre waters free front in deposits of the deposits of th	rom substances in prevent full mareneficial uses? rom substances in tenance of beneficial uses with the control of the contro	n sufficient a sintenance of d floating del no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficien yes mounts to caus no pliances, demo	the formation of the control of the	of putrescent, unsightly of yes unsightly or prevent full or or turbidity, offensive of the control of t	and solid
(1) A (2) A (3) A (4) A (5) L (6) I	Water Level Other INER HANDET TION: Are waters free froaintenance of be Are waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free from the waters free free waters free from the waters free free waters free from the waters free free waters free free waters free free waters free free waters free free waters free free waters free free waters free free waters free free waters free free free waters free free waters free free waters free free free waters free free free waters free free free free waters free free free waters free free free free free free free f	rom substances in prevent full mareneficial uses? rom substances in tenance of beneficial uses with the control of the contro	n sufficient a sintenance of d floating del no n sufficient a ficial uses?	mounts to caus beneficial uses bris in sufficien yes mounts to caus no pliances, demo	the formation of the control of the	of putrescent, unsightly of yes unsightly or prevent full or or turbidity, offensive of the control of t	and solid

SAMPLING LOCAT	ION: IP-Jor	olin Facility	SAMPLE	ENO. 001	***
SAMPLING DATE:	4/11	116		·	
SAMPLING TIME:	101	40			
TIME RAIN EVENT	STARTED:	0102	Д Д/РМ		
REASON FOR SAMPLING:	REGULAR SPECIAL S.	SAMPLING AMPLING	<u>~</u>		موافق
WEATHER: Claudy		TEMPERATU	RE: 7	2 , ,,	
WATER FLOW CONDITIONS (standing	g, movement, fa	ast, slow):	SIOW		_
Field Equipment Cleaning Steps: - potable water and phosphate potable water rinse	free soap		Equipme	nt Cleaned:	
	leionized nexane	L	ole Container Clea aboratory Certified all Cleaned Contains	d Containers	<u>v</u>
OBSERVATIONS OF WATER:					Q=
Appearance: C	LEAT		14-		- 29 mg
Depth: /O	Width:		Velocity:		- J. · · ·
ON-SITE MEASUREMENTS: Temperature pH Conductivity Water Level Other PPM 102 CONTAINER HANDLING:	7		leasuring instrument MBO HANNA. 98129	Calibration Date 4/11//6	- - - - -
INSPECTION:		Dids Tape	<u> </u>		
(1) Are waters free from substances in bottom deposits or prevent full ma	n sufficient amo	ounts to cause the eneficial uses?	e formation of pu no y	trescent, unsightly o	r harmful
(2) Are waters free from oil, scum an maintenance of beneficial uses?	d floating debri		nounts to be unsig	thtly or prevent full	
(3) Are waters free from substances is prevent full maintenance of benef		ounts to cause un no yes		urbidity, offensive o	dor or
(4) Are waters free from used tires can waste? no yes	ar bodies, appli	ances, demolitio	n debris, used vel	nicles or equipment	and solid
(5) Is the area surrounding waters fre	e of evidence o	f erosion, runoff	, sediment accum	ulation? no yes_	<u>U</u>
(6) Is there any evidence of leachate	overflow to sur	rounding waters'	no yes		
OTHER COMMENTS:					
SAMPLER'S SIGNATURE:	renn	Ruttal	lyf.	DATE: 4/11/	16

SAMPLING LOCATION: IP-Joplin Facility	SAMPLE NO
SAMPLING DATE: 4/1/16	
SAMPLING TIME: 11:24	
time rain event started: θ , θ 2	& X1/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING	<u>v</u>
WEATHER: Coudy TEMPERATURE:	7.2
WATER FLOW CONDITIONS (standing, movement, fast, slow):	Slow
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse	Equipment Cleaned:
- solvent rinse: acetone / hexane Labora	ontainer Cleaning atory Certified Containers Cleaned Containers
OBSERVATIONS OF WATER:	. 1
Appearance: Clear Odor: Noive Depth: Width: 64 Other Comments:	Velocity: 1500
Conductivity Water Level HI 9	ment Date
Other PPM 49 CONTAINER HANDLING: Sides Labeled ν Lids Taped	Samples Packed in Ice
INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the form bottom deposits or prevent full maintenance of beneficial uses?	
(2) Are waters free from oil, scum and floating debris in sufficient amount maintenance of beneficial uses? no yes _\bullet _	ts to be unsightly or prevent full
(3) Are waters free from substances in sufficient amounts to cause unsight prevent full maintenance of beneficial uses? no yes	tly color or turbidity, offensive odor or
(4) Are waters free from used tires, car bodies, appliances, demolition debe waste? no yes	ris, used vehicles or equipment and solid
(5) Is the area surrounding waters free of evidence of erosion, runoff, seding	ment accumulation? noyes
(6) Is there any evidence of leachate overflow to surrounding waters? no	<u> </u>

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 001
SAMPLING DATE: <u>5 16 16</u>
SAMPLING TIME: 11.45 AMPM
TIME RAIN EVENT STARTED: 0001 AM/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: RAINY TEMPERATURE: 65
WATER FLOW CONDITIONS (standing, movement, fast, slow):
WATER TEST CONDITIONS (standing, movement, fast, slow).
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse - water rinse: distilled / deionized - solvent rinse: acetone / hexane - air dry Equipment Cleaned: Sample Container Cleaning Laboratory Certified Containers Field Cleaned Containers
OBSERVATIONS OF WATER:
Appearance: CleAV
Appearance: CleAV Odor:
Other Comments:
ON-SITE MEASUREMENTS: Temperature pH 7.74 Conductivity Water Level Other PPM 144 Instrument F/C Combo 5/16/16 PH+EC By HANNA Hi 98 129
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? no yes
SAMPLER'S SIGNATURE: LONGING PULLS DATE: 2 16/16

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 000
SAMPLING DATE: <u>5/16/16</u>
SAMPLING TIME: 12:45 AMPM
TIME RAIN EVENT STARTED: O O.O AM AM/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: RAINY TEMPERATURE: 65
WATER FLOW CONDITIONS (standing, movement, fast, slow): FAST
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse - water rinse: distilled / deionized - solvent rinse: acetone / hexane - air dry Equipment Cleaned: Sample Container Cleaning Laboratory Certified Containers
OBSERVATIONS OF WATER: Appearance: C/eAr Odor: Wolve Depth: 10 Width: 80 Velocity: 2500 Other Comments: Measuring Calibration
ON-SITE MEASUREMENTS: Temperature 14.2 pH 7.93 Conductivity 47 Water Level Other PPM 23
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? no yes (2) Are waters free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? no yes (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes (4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes (5) Is the area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes (6) Is there any evidence of leachate overflow to surrounding waters? no yes
SAMPLER'S SIGNATURE: Lorenzo & Malley DATE: 5 /16/16

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 60 0
SAMPLING DATE: 6/24/16 SAMPLING TIME: 0900 MYPM
TIME RAIN EVENT STARTED: 9:00 AM/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: Rowny TEMPERATURE: 86
WATER FLOW CONDITIONS (standing, movement, fast, slow): FAST
Field Equipment Cleaning Steps: Equipment Cleaned:
- potable water and phosphate-free soap - potable water rinse
- water rinse: distilled / deionized Sample Container Cleaning - solvent rinse: acetone / hexane Laboratory Certified Containers - air dry Field Cleaned Containers
OBSERVATIONS OF WATER:
Appearance: CIPAP Odor: NONO
Depth: 10 Width: 64 Velocity: 2500 Start Other Comments:
Measuring Calibration 3,0,000
ON-SITE MEASUREMENTS: Instrument Pate //
Temperature 24.1 F/C CoNboby $6124/16$ pH 6.89 HANNA
Conductivity 164 H1 98129
Water Level Other PPM 83
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION:
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful
bottom deposits or prevent full maintenance of beneficial uses? no yes
(2) Are waters free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? no yes
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes
(5) Is area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes
(6) Is there any evidence of leachate overflow to surrounding waters? no yes
OTHER COMMENTS:
SAMPLER'S SIGNATURE: Lower Pullsby DATE: 6 (24/16)

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 002
SAMPLING DATE: 6/24/16 SAMPLING TIME: 10:00 AM/PM
TIME RAIN EVENT STARTED: OOO (MMPM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: RAINY TEMPERATURE: 86
WATER FLOW CONDITIONS (standing, movement, fast, slow):
Field Equipment Cleaning Steps: Equipment Cleaned: - potable water and phosphate-free soap
- potable water rinse
- water rinse: distilled / deionized Sample Container Cleaning - solvent rinse: acetone / hexane Laboratory Certified Containers - air dry Field Cleaned Containers
OBSERVATIONS OF WATER: Appearance: Clear Odor: Noive 3.5
Appearance: Clear Odor: Noive 25
Depth: 11 Width: 79 Velocity: 2500
Other Comments:
ON-SITE MEASUREMENTS: Measuring Calibration Onstrument Date /
Temperature 23,8 F/C Combo by 6/24/16
pH 6.54 HAWK Conductivity 2.2
Water Level Ht 98/29
Other PPM 109
CONTAINER HANDLING: Sides Labeled $\ensuremath{\mathcal{U}}$ Lids Taped Samples Packed in Ice $\ensuremath{\mathcal{U}}$
INSPECTION:
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? no yes
(2) Are waters free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? no yes
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes/_
(5) Is area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes
(6) Is there any evidence of leachate overflow to surrounding waters? no
OTHER COMMENTS:
SAMPLER'S SIGNATURE: Lyrenz Pillsley DATE: 6/24/16

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 001
SAMPLING DATE: 7 4/16 SAMPLING TIME: 10 45 AM/PM
TIME RAIN EVENT STARTED: 7/3/16/ 2100 AM/PM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: Cloudy TEMPERATURE: 73
WATER FLOW CONDITIONS (standing, movement, fast, slow): 9 (6 YV)
Field Equipment Cleaning Steps: Equipment Cleaned: - potable water and phosphate-free soap - potable water rinse - water rinse; distilled / deionized Sample Container Cleaning
- water rinse: distilled / defonized Sample Container Cleaning - solvent rinse: acetone / hexane Laboratory Certified Containers - air dry Field Cleaned Containers
OBSERVATIONS OF WATER:
Appearance: CleAr Odor: Vone
Depth: 42 Velocity: 750
Other Comments:
ON-SITE MEASUREMENTS: Measuring Calibration Instrument Pate(
Temperature 24.5 F/C $Combo$ $7/4/6$
pH 7.58 by HANNA
Conductivity <u>5.17</u> <u>H1 48 12 9</u>
Other PPM 258
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION:
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? no yes
(2) Are waters free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? no yes
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes
(5) Is area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes
(6) Is there any evidence of leachate overflow to surrounding waters? no yes
OTHER COMMENTS:
Za .
SAMPLER'S SIGNATURE: LOLENGE FMOLENY DATE: 7/4/16

SAMPLING LOCATION: IP-Joplin Facility SAMPLE NO. 002
SAMPLING DATE: 7/4 //6 SAMPLING TIME: 11:45 AM/PM
TIME RAIN EVENT STARTED: 7/3/16 21:00 AMPM
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING
WEATHER: RAINY TEMPERATURE: 73
WATER FLOW CONDITIONS (standing, movement, fast, slow): \$\int \int \lambda \tag{\sqrt{0} \text{V}}\$
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse
- water rinse; distilled / deionized Sample Container Cleaning - solvent rinse: acetone / hexane Laboratory Certified Containers - air dry Field Cleaned Containers
OBSERVATIONS OF WATER: Appearance: Cloudy Odor: None
Depth: 4 Width: 48 Velocity: 500 Other Comments:
ON-SITE MEASUREMENTS: Temperature 24,4 pH 7.10 Conductivity Water Level Other 192
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice
INSPECTION:
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? no yes
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no yes
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste? no yes
(5) Is area surrounding waters free of evidence of erosion, runoff, sediment accumulation? no yes
(6) Is there any evidence of leachate overflow to surrounding waters? no yes
OTHER COMMENTS:
SAMPLER'S SIGNATURE: LANGEWAY PORT DATE: 7/4 / 16

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STORMWATER SAMPLING RECORD

SAMPLING LO			
	CATION: IP-Joplin Facility	SAMPLE NO. 901	
SAMPLING DA			
SAMPLING TIM	ME: 16:00	AM/PM	
TIME RAIN EV	ENT STARTED: 00,0	O AM/PM	
REASON FOR SAMPLING:	REGULAR SAMPLING	<u> </u>	
WEATHER: RAIN	/ TEMPERA	ATURE: 78	
WATER FLOW CONDITIONS (star		FAST	_
Field Equipment Cleaning Surps:		Equipment Cleaned:	
- potable water and phospi - potable water rinse			
- water rinse: distilled		Sample Container Cleaning	
- solvent rinse: acetone - air dry	/ hexane	Laboratory Certified Containers Field Cleaned Containers	<u>-</u>
			
OBSERVATIONS OF WATER:	croudy		
Appearance: (NONE		-
Depth: 13" Other Comments:	Width: 55	Velocity: 4,400	_
Ouier Comments.		Measuring Calibration	-
ON-SITE MEASUREMENTS:	- 2 C	Instrument Date	
Temperature 23	F/C	BY HAVILE	
Conductivity 46	3	27 17 17 17	
Ward Prievel 2/	9	H198127	
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	Sides Labeled: V Lid	s Taped Samples Packed in Ice	- V
Other CONTAINER HANDLING:	Sides Labeled V Lid	s Taped Samples Packed in Ice _	<u>v</u>
CONTAINER HANDLING:			· · · · · · · · · · · · · · · · · · ·
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substa		use the formation of putrescent, unsightly o	· · · · · · · · · · · · · · · · · · ·
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substated battom deposits or prevent in the content of the content	nces in sufficient amounts to ca	use the formation of putrescent, unsightly o	· · · · · · · · · · · · · · · · · · ·
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substated battom deposits or prevent in the content of the content	nces in sufficient amounts to car full maintenance of beneficial us um and floating debris in suffici	use the formation of putrescent, unsightly o	· · · · · · · · · · · · · · · · · · ·
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substate bottom deposits or prevent in the substate of the substate	nces in sufficient amounts to car full maintenance of beneficial us um and floating debris in suffici ses? noyes	use the formation of putrescent, unsightly o es? no yes ent amounts to be unsightly or prevent full	r harmful
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substate bottom deposits or prevent in the substate of the substate	nces in sufficient amounts to carfull maintenance of beneficial usum and floating debris in sufficiences? noyes	use the formation of putrescent, unsightly o	r harmful
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substate bottom deposits or prevent in the free from oil, see maintenance of bemeficial to the free from substate prevent full maintenance of	nces in sufficient amounts to carfull maintenance of beneficial usum and floating debris in sufficiences? no	use the formation of putrescent, unsightly of ses? no yes ent amounts to be unsightly or prevent full use unsightly color or turbidity, offensive of yes	r harmful dor on
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substate bottom deposits or prevent in the following deposits or prevent in the following deposits or prevent in the following deposits or prevent in the following deposits or prevent in the following deposits or prevent in the following deposits of the following deposits or prevent in the following deposits of the following deposits of the following deposits of the following deposits of the following deposits of the following deposits of the following deposits of the following deposits of the following deposits or prevent in the following deposits of the following deposits or prevent in the following deposits	nces in sufficient amounts to car full maintenance of beneficial us um and floating debris in suffici ses? noyes noces in sufficient amounts to car beneficial uses? no ires, car bodies, appliances, dem	use the formation of putrescent, unsightly of ses? no yes ent amounts to be unsightly or prevent full use unsightly color or turbidity, offensive of	r harmful dor on
CONTAINER HANDLING: INSPECTION: (1) Are waters free from substate bottom deposits or prevent in the contained of the prevent from substate prevent full maintenance of the contained of the con	nces in sufficient amounts to car full maintenance of beneficial us um and floating debris in suffici ses? noyes mees in sufficient amounts to car beneficial uses? no ires, car bodies, appliances, dem	use the formation of putrescent, unsightly of ses? no yes ent amounts to be unsightly or prevent full use unsightly color or turbidity, offensive of yes	r harmful dor or and solid

3/1/2016

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STORMWATER SAMPLING RECORD

SAMPLING DATE: S 1/16 SAMPLING TIME: 1500 AM/PM THER RAIN EVENT STARTED: 0000 AM/PM REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SPECIAL SAMPLING SIDE water tinse: distilled / deionized solvent rinse: acetone / became solvent rinse: acetone / became Laboratory Certified Containers - air day Separance: Sample Container Cleaning Laboratory Certified Containers - air day Container Cleaning Sample: Sample Containers - air day Container Cleaning Laboratory Certified Containers - air day Container Cleaning Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Containers - air day Cont	OWINILITING CO.	NG LOCATION: IP-I	oplim Facility	SAMPLE NO. 002	
SAMPLING TIME: 1500 AMPM TIME RAIN EVENT STARTED: 0000 AMPM REASON FOR SAMPLING: REGULAR SAMPLING V SPECIAL SAMPLING V WEATHER: BA / M V SPECIAL SAMPLING V WATER FLOW CONDITIONS (standing, movement, fast, slow): S/OW WATER FLOW CONDITIONS (standing, movement, fast, slow): S/OW Field Equipment Cleaning Steps: Equipment Cleaned: Solvent tinse: actione / hexane - six day Sectione / hexane - six day Sectione / hexane Sample Container Cleaned: Sample Container Section / hexane - six day Sectione / hexane Sample Container Cleaned: Sample Container Section / hexane Section / hexane Sample Container Section / Sec	SAMPLIN		1. 1. 1		
REASON FOR SAMPLING: REGULAR SAMPLING SPECIAL SAMPLING WEATHER: WATER FLOW CONDITIONS (standing, movement, fast, slow): Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse: - water rinse: distilled / deionized - solvent rinse: acctone / hexane - air dry COBSERVATIONS OF WATER: Appearance: Other Comments: ON-SITE MEASUREMENTS: Temperature: FIC CAMP By Conductivity FIC CONDUCTIVITY TEMPERATURE: Sample Container Cleaning Laboratory Certified Containers Field Cleaned Containers Field Cleaned Containers Calibration Instrument Temperature: FIC CAMP By THANKE Other Constructivity FIC CAMP By THANKE Other Constructivity FIC CAMP By THANKE Other CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? 1) Are waters free from oil, soum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? 1) Are waters free from oil, soum and floating debris in sufficient amounts to cause unsightly or or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or examment and solid (4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or examment and solid	SAMPLIN				
REASON FOR SAMPLING: SPECIAL SAMPLING SPECIAL SAMPLING WEATHER: WATER FLOW CONDITIONS (standing, movement, fast, slow): Slow Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse: - water rinse from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? - water rinse from oil, seum and floating debrits in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? - waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? - waters free from used tires, car bodies, appliances, demolition debris, used vehicles or canimment and solid	TIME RA	•			
WATER FLOW CONDITIONS (standing, movement, fast, slow): Sow Sow Sow		REGULAI	R SAMPLING ℓ		
Field Equipment Cleaning Steps: - potable water and phosphate-free soap - potable water rinse: - water rinse: - water rinse: - sal dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - solvent rinse: - sar dry - sar dry - solvent rinse: - sar dry	11 /4 /	NY		76	
- potable water and phosphate-free soap - potable water rinse - water rinse: distilled / deionized - solvent rinse: acctone / hexane - air dry - Sample Container Cleaning - Laboratory Certified Coestainers - Appearance: - Appearance: - Odor: - Depth:	WATER FLOW CONDITION	S (standing, movement,	fast, slow):	510W	
OBSERVATIONS OF WATER: Appearance: Odor: Deptk: De	 potable water and p potable water rinse water rinse: dist 	phosphate-free soap ; tilled / deionized	•	ontainer Cleaning	
Appearance:	- air dry				
ON-SITE MEASUREMENTS: Temperature pH Conductivity Wakes Labeled Other CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? 1) Are waters free from oil, seum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 1) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? 2) Are waters free from substances in sufficient amounts to cause waters free from substances are substances and substances are su	Appearance: Odor:	Clean		Velocity: 2000	
ON-SITE MEASUREMENTS: Temperature pH Conductivity Winter aveil Other CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? (2) Are waters free from oil, seum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? (4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid	Other Comments:			7,000	
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? noyes	Temperature pH Conductivity	7.35 2.35 31	lnstrun		
CONTAINER HANDLING: Sides Labeled Lids Taped Samples Packed in Ice INSPECTION: (1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? noyes					
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? (2) Are waters free from oil, seum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no	Other				
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? (2) Are waters free from oil, seum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no	CONTAINED BANDS BUC.	Sides Labeled	Lids Taped	Samples Packed in Ice	
(1) Are waters free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses? (2) Are waters free from oil, seum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses? (3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? no	CONTRIBUTER HANDLEVU!				
(3) Are waters free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses? noyes					_
prevent full maintenance of beneficial uses? noyes	INSPECTION: (1) Are waters free from sul	bstances in sufficient ament full maintenance of b	ounts to cause the form	ation of putrescent, unsightly or harmful	
(4) Are waters free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid	INSPECTION: (1) Are waters free from sulbottom deposits or prevention. (2) Are waters free from oil.	ent full maintenance of b , seum and floating debri	eneficial uses?	no yes	
moner for ACP h	(1) Are waters free from sul bottom deposits or preve (2) Are waters free from oil maintenance of bemeficia (3) Are waters free from sub	ent full maintenance of both a seum and floating debrial uses? noy but ances in sufficient amounts	is in sufficient amounts	to be unsightly or prevent full	· .
(5) Is the area surrounding waters free of evidence of erosion, runoff, sediment accumulation? noyes	INSPECTION: (1) Are waters free from sul bottom deposits or prevention of the from oil maintenance of beneficial of the from subsprevent full maintenance of the from use the free from use the free from use the first of the from use the first of the from use the first of the from use the first of the from use the first of the from use the first of the from use the first of the fi	ent full maintenance of both as the second of the second o	is in sufficient amounts res ounts to cause unsignaly noyes	to be unsightly or prevent full color or turbidity, offensive odor or	

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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INTERNATIONAL PAPER COMPANY JOPLIN, MO

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PRECIPITATION DAILY LOG

INTERNATIONAL PAPER COMPANY JOPLIN, MO

MONTH JUY YEAR 2016

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PRECIPITATION DAILY LOG

INTERNATIONAL PAPER COMPANY JOPLIN, MO

MONTH 2016 YEAR Qugust

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Appendix J Subsidence Monitoring Form & Leachate Collection Sump Leak Test Results



ALLGEIER, MARTIN and ASSOCIATES, INC.

— Consulting Engineers —

SUBSIDENCE MONITORING

(DATA IN FEET TO SECOND DECIMAL POINT)

BENCHMARK BASELINE 09.01.94		01.16.16	CHANGE
1-1	1063.33	DESTROYED	
1-2	1063.35	DESTROYED	
1-3	1063.33	DESTROYED	
1-6	1063.35	DESTROYED	
4-1	1060.75	DESTROYED	
4-2	1060.62	DESTROYED	
4-3	1060.75	DESTROYED	
5-1	1060.43	DESTROYED	
5-2	1060.25	DESTROYED	
7-1	1058.39	DESTROYED	
7-2	1058.48	1058.43	-0.05
7-3	1058.56	1058.52	-0.04
7-4	1058.52	1058.46	-0.06
5-5	1060.37	1060.38	+0.01
5-7	1060.37	1060.37	0.00
5-9	1060.43	1060.41	-0.02

Any change in elevation greater than 0.1 feet is considered to be an indicator of catastrophic collapse. Remeasure any reading over 0.05 feet to verify the accuracy of reading.

SURVEYOR:

DATE: January 16, 2016

Corporate Office

7231 East 24th Street Joplin, Missouri 64804

Alison Levinson Senior Geologist EarthCon Consultants, Inc. 1880 West Oak Parkway Bldg 100, Suite 106 Marietta, GA. 30062

Subject: 2016 Annual Leachate Sump Leak Testing- I.P Joplin Facility

Dear Ms. Levinson.

Annual leak testing of the leachate collection sumps for the soil treatment cells at the International Paper Company (IP) pole treatment facility located on Range Line Road in Joplin, Missouri, was conducted on November 17, 2016. Personnel present for the testing was Lorenzo Pittsley – EarthCon Site Operator.

The three sumps tested are used to collect leachate from each of the soil treatment cells, at the facility. Each of the sumps consists of pre-cast concrete manhole sections that range from about 13.5 to 14.5 feet in depth. Each sump is equipped with a dedicated automatic sump pump that discharges to a nearby above ground storage tank for leachate storage prior to subsequent on-site pre-treatment and disposal to the City of Joplin POTW. Each holding tank is situated in a concrete secondary containment structure. The pump controls normally maintain the leachate level to within about 1 foot of the sump bottom.

Prior to beginning the leak testing, the valve on the inflow pipe, in each sump (normally maintained in the open position), was closed. Potable water was then introduced into each individual sump until the volume of the liquid in the sump rose to a level initiating start-up of the sump pump. At that time, the electric power disconnect switch to the pump was switched to the "OFF" position to maintain the liquid level in each sump for leak testing. An unspecified amount of additional potable water was then introduced into the sumps, to bring the water level to a point above the normal pump activation level. The water level surface in each sump was then allowed time to stabilize. The static liquid level in each individual sump was then measured using a standard water level indicator (Keck Instruments Model ET), which is equipped with an audible alarm to indicate the depth to the top of the liquid level. Liquid level measurements were made by inserting the probe of the liquid level indicator instrument inside a permanently installed 1" PVC pipe, which is securely attached to the access ladder supports located in each of the sumps. All measurements were taken from the top of the PVC pipe and read to the nearest hundredth of a foot.

A total of three measurements were made for each sump, at approximate 1 to 2 - hour intervals.

The liquid level measurement test data is summarized below:

Water Level Measurements (ft. from top of PVC pipe to top of water)

	Sump #5	Sump #7A	Sump #7B
Initial Measurement	12.32	10.87	13.65
1 hour Measurement	12.32	10.87	13.65
4 hour Measurement	12.32	10.87	13.65

As indicated in the above table, the static water levels measured in each individual sump during the sump integrity testing did not measurably change during the test period. Based on this data, there appears to be no leakage indicated, at this time.

Lorenzo Pittsley Senior Technician I.P. Joplin Site EarthCon Consultants, Inc. Appendix K
Compliance Checklists

SEMI-ANNUAL CLOSED UNIT COVER INSPECTION FORM Facility: International Paper, Joplin, Missouri

<u>A.</u>	GENERAL INFORMATION:					
1						
2	Inspector: LPutsley					
	Unit inspected: MTA/Drip Pad					
	Facility Owner - International Paper					
If d	lamage is present, indicate if damage is Minor or Major the ormation.	n use Se	ection E	to provid	de addition	nal
III						
	Minor Damage=no immediate repair needed, but should Major Damage= requires immediate repair and submit	be repair tal of a w	ed or wa ork scor	atched d pe to cor	uring the y	year. air.
В.	STORMWATER MANAGEMENT SYSTEM:	Yes	No	NA	Minor	Major
1	Are swales, culverts and catch basins free of leaves/debris?	V				
2	Do swales and culverts have a positive slope?	V				
3	Is there erosion within swales?		V			
4	Are there areas of ponding on the landfill or at the toe?		V			
5	Has there been any stormwater damage?				V	
C. (OVERALL CAP INTEGRITY:	Yes	No	NA	Minor	Major
1	Noticeable washouts/settlement of the cap?		V,			
2	Any exposed waste material?		V.			
3	Damage to cap due to wildlife?		V			
4	Growth of woody vegetation on cap?		V		·	
5	Any tearing or separation of synthetic cover at the retaining wall or monitoring well(s)?	:	V			
6	Any exposed tearing/separation of synthetic cover system at seams?		V			
7	Unequal distribution of cover sand (infill)?	V			V	
D. (OTHER:	Yes	No	NA	Minor	Major
1	Is the access road(s) in good condition?	V				
2	Is the perimeter fence in good condition?	V				
E. /	ADDITIONAL COMMENTS:					
	Added sand to cover					

SEMI-ANNUAL CLOSED UNIT COVER INSPECTION FORM

Facility: International Paper, Joplin, Missouri

						1					
A. (GENERAL INFORMATION:										
	Date of inspection: 3/8//6										
2	Inspector: Lorenzo Pittsley										
	Unit inspected: MTA/Drip Pad					:					
4	Facility Owner - International Paper										
	amage is present, indicate if damage is Minor or Major theo ormation.	n use Se	ction E t	o provid	e addition	al					
	Minor Damage=no immediate repair needed, but should b	e repaire	ed or wa	tched di	uring the v	ear.					
	Major Damage= requires immediate repair and submitt										
В. 8	STORMWATER MANAGEMENT SYSTEM:	Yes	No	NA.	Minor	Major					
1	Are swales, culverts and catch basins free of leaves/debris?	V									
2	Do swales and culverts have a positive slope?	V									
	Is there erosion within swales?		V								
4	Are there areas of ponding on the landfill or at the toe?		V								
5											
C.	OVERALL CAP INTEGRITY:	Yes	No	NA	Minor	Major					
1	Noticeable washouts/settlement of the cap?		V								
2	Any exposed waste material?		V								
3	Damage to cap due to wildlife?		V								
4	Growth of woody vegetation on cap?		V								
5	Any tearing or separation of synthetic cover at the retaining wall or monitoring well(s)?		V								
6	Any exposed tearing/separation of synthetic cover system at seams?		V								
7	Unequal distribution of cover sand (infill)?				V						
D.	OTHER:	Yes	No	NA	Minor	Major					
1	Is the access road(s) in good condition?	V,									
2	Is the perimeter fence in good condition?	V									
E.	ADDITIONAL COMMENTS:										
	Added sand to cover.										

POST-CLOSURE LANDFARM QUARTERLY INSPECTION RECORD: 34 July QUARTER 20/6/1 DATE(S): 8/3///

	CONE	DITION	REPAIR R	EQUIRED	REPAIR COMPLETE			
ITEM	GOOD	POOR	YES	ON	EXPLANATION	DATE	BY	COMMENTS
Cover Integrity Landfarm 5 Landfarm 7	Y			<i>V</i>		\$/ 3.0 16 8 13.016	LP LP	
Structure Integrity Landfarm 5 Landfarm 7	<i>V</i>			V		8/30/16 831.16		
Drainage Control Landfarm 5 Landfarm 7	V		V	*	ON GOING REPAIRS	8/3 4 16	h.P	
Leachate System Landfarm 5 Landfarm 7E Landfarm 7W	V			V		8 30 16 8 13 U16 8 13 U16	LP LP	
Site Security	V			V		8/3//16	18	

"I certify that the above information is true." Name Forenge P.M.	le and accurate to the best of r	my knowledge Date	8/31/16	Time [12:45
Ivanie //					
<i>(</i>	•		L		

* adding riprap to downspouts

POST-CLOSURE LANDFARM QUARTERLY INSPECTION RECORD: 4 QUARTER 20/6 / DATE(S): 1/21/6

	CONE	DITION	REPAIR F	REQUIRED	REPAIR COM	PLETE		
ITEM	GOOD	POOR	YES	ON	EXPLANATION	DATE	ВҮ	COMMENTS
Cover Integrity								
Landfarm 5	· ·	-				112216	hP	
Landfarm 7	$\overline{}$					1/12/16	142116	# <i>P</i>
Structure Integrity								
Landfarm 5					,	11/22/16	25	
Landfarm 7						11/2/16		
Drainage Control								1-15-
Landfarm 5	ν					11/22/16		adding op
Landfarm 7			V		ON GOING	11/21/6	RP	- rap to
Leachate System								1
Landfarm 5	V					11/22/16		adding rip - rap to clounspouts
Landfarm 7E	V					11/21/16	LP	,
Landfarm 7W	V					1/12/16	, w	
Site Security	V					112116	J. P	

"I certify that the above information is true and accurate to the	ne best of my knowledge." /		
Name Lorenzo Pittsland	Date 41/22/16	Time 15.00	

	CON	DITION	REPAIR F	REQUIRED	REPAIR COMPLETE			
ITEM	0 00 09	Ę Q	VES.	S	EXPLANATION			
Cover Integrity Landlarm 5 Landlarm 7						2/4	10	* need to add
Structure Integrity Landlarm 5 Landlarm 7						2/4	12	* need to add rip rap to downspout
Drainage Control Landlarm 5 Landlarm 7						2/4	11	
Leachate System Landlarm 5 Landlarm 7E						2/4	A.	
Landlarm 7W Site Security (lence, etc.)						2/5	28	

"I certify that the above information is	s true and accurate to the	best of my knowledge."			
1 1 1	그의 이 원래에 많아가 되었다. 원양 등		Z = 7 // 2	그리고 없었다. 그리고 함, 시설이	
Name Lorenzo Littsler		Date 2/	5/16		
<u> </u>	4	1200			

POST-CLOSURE LANDFARM QUARTERLY INSPECTION RECORD: 2 QUARTER 20 16/ DATE(S):

	CONDITION		REPAIR	REGUIRED	REPAIR COMPLETE				
ITEM	GOOD	, E	YES	9	EXPLANATION	DATE	ВУ	COMMENTS	
Cover Integrity						ercen many i V APANA	MANAGEN SHIPP, CAN	*On going maintenance to down-sports	
Landfarm 5	<i>V</i>					12/2	J.P.		
Landlerm 7	ľ					2/4	A.F	maintenance	
Structure Integrity						579	10	to down-sports	
Landfarm 5	· · · · · ·					1/2/6	10	라면 이동 작가 가는 사람이 되었다. 1800년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년 - 1801년	
Landlarm 7	l						101		
Drainage Control Landlarm 5						15/4	10		
Landlarm 7	'v				-#	519	20		
Leachale System									
Landlarm 5	<i>i</i> /					5/9	112		
Landlarm 7E						12/4	135	[2] : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :	
Landiarm 7W						2/9	128		
Site Security (lence, etc.)						214	9 6		

											 			_			
10	artify tha	the above	informatio	n is this and	d accurate to the	e best of my	knowledge										
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N.	MU	my	1 11	VILLEY													
114									بلغيب فيتبين ويتبيان							-	

DATE	INITIALS	DESCRIPTION OF TASK
1/1/2016	LP	Pumped water off Haz mat pad
1/11/2016	LP	Pumped rainwater out of leachate tank containments
1/12/2016	LP	Rebuild flow meter
1/13/2016	LP	Bailed J-23.43R
1/14/2016	LP	Pumped leachate: Tank 5 890 gallons, Tank 7a 150 gallons, Tank 7b 950 gallons
1/18/2016	LP	Checked site fence, repaired two holes and front gate fence
1/27/2016	LP	Increased flow rate in LSR-8R from 1.3 to 3.2 gpm, and LSP-3 from 2.9 to 4.0 gpm
1/28/2016	LP	Repaired process pump and re-started system, checked total depth on MW-14 (160 feet),

	<u> </u>	
DATE	INITIALS	DESCRIPTION OF TASK
2/2-3/2016	LP	Spread sand on MTA/DP cover
2/4/2016	LP	Worked to unclog sediments from outfall sewer line
2/10/2016	LP	fixed cracked fitting that was leaking
2/11/2016	LP	Set up composite sampler for quarterly GWTS sampling. Bailed J-23.43R
2/12/2016	LP	Collected quarterly GWTS samples, pumped Sump 23 600 gallons
2/16/2016	LP	Cleared brush and debris from Outfall #001
2/18/2016	LP	Snaked outfall to POTW.
2/29/2016	LP	Drilled drain holes in abandoned tank foundations outside GWTS building to drain rainwater.

DATE	INITIALS	DESCRIPTION OF TASK
3/3/2016	LP	Cleared garbage and debris out of creeks.
3/4/2016	LP	Painted Outfall signs
3/7-11/2016	LP	Deconned unused tank in GWTS building by rinsing, pressure washing, and acid rinsing. Moved to containment pad outside GWTS for later disposal.
3/9/2016	LP	Repaired flow LSP-3 flow meter.
3/15/2016	LP	Pumped leachate Tank 5 700 gallons, Tank 7a 150 gallons and Tank 7b 650 gallons.
3/16/2016	LP	Pumped Sump 23 800 gallons emulsified product and water.
3/17/2016	LP	Bailed J-23.43R
3/22/2016	LP	Contractor patched front office roof.
3/23/2016	LP	Pained a portion of the GWTS building floor.

DATE	INITIALS	DESCRIPTION OF TASK
4/11/2016	LP	Collected stormwater samples.
4/12/2016	LP	Pumped rainwater off Hazmat pad.
4/18/2016	LP	Cleaned float system back up.
4/19/2016	LP	Cleaned water/sediment off hazmat pad
4/20/2016	LP	Cleaned off decon pad, cleaned shop, bailed J-23.43R
4/21/2016	LP	Pumped leachate: Tank 5 625 gallons, Tank 7a 0 gallons, Tank 7b 750 gallons
4/22/2016	LP	Performed inspection of Landfarms
4/28-29/2016	LP	Installed metal on WWTS Building windows for security

DATE	INITIALS	DESCRIPTION OF TASK
5/2/2016	LP	Bailed J-23.43R, trace NAPL
5/3/2016	LP	Pumped leachate: Tank 5 650 gallons, Tank 7a 0 gallons, Tank 7b 725 gallons
5/5/2016	LP	Cut pipe for GWTS update, installed extra security cameras in WWTS building
5/6/2016	LP	Cut pipe for GWTS update, performed maintenance on Night Owl Security system
5/11/2016	LP	Set up to collect quarterly treatment system samples.
5/12-13/2016	LP	Collected quarterly treatment system samples, shipped to lab. Seeded bare patches on borrow area.
5/16/2016	LP	Performed Landfarm inspection
5/18/2016	LP	Replace surge protection on Night Owl security system. Observed repair of natural gas leak on site.
5/19/2016	LP	Pressure washed GWTS floor
5/22/2016	LP	Paint GWTS floor

DATE	INITIALS	DESCRIPTION OF TASK
6/7/2016	LP	Restart GWT system.
6/10/2016	LP	Finished dry fit of sand filter manifold, set up wash station for manifold pipe.
6/13/2016	LP	Unloaded oil/water separator and inspected.
6/15-16/2016	LP	Weed eat around wells.
6/17/2016	LP	Worked on sand filter manifold, weed eat around Landfarm #5
6/29/2016	LP	Bailed J-23.43R, finished sand filter manifold
6/30/2016	LP	Worked on bag filters. Pumped 600 gallons water/NAPL from Sump 23.

DATE	INITIALS	DESCRIPTION OF TASK
7/5/2016	LP	Pumped leachate: Tank #5 450 gallons, Tank #7a 0 gallons, Tank #7b 650 gallons
7/6/2016	LP	Bailed J-23.43R.
7/7/2016	LP	Pumped Sump 23: removed approximately 650 gallons of water and NAPL.
7/11/2016	LP	Discovered city water leak by GWTS building, turned water off and prepared to repair the leak.
7/13/2016	LP	Measured NAPL in MR-4: 6.75 feet of NAPL.
7/18/2016	LP	Surveyor's on site to measure elevations of below grade wells that were modified. Completed repairs on water line leak.
7/19/2016	LP	Continued mainteneace on Landfarm #5 downspout areas, cleared and repaired buried drains near Landfarm #5.
7/20/2016	LP	Continued maintenance on Landfarms, removed brush from under northeast corner of Landfarm #7.
7/21-23/2016	LP	Continued maintenance on Landfarm #5. Included clearing a blocked drain, adding to downspouts and clearing brush.
7/22/2016	LP	North east side land farm #5 , put in landscaping blocks in back, laid in weed block and brick brack

DATE	INITIALS	DESCRIPTION OF TASK
8/1/2016	LP	Emptied oil/water separator for cleaning. Added rip rap to downspouts on Landfarm #7.
8/2/2016	LP	Cleaned oil/water separator, continued maintenance of Landfarm #7.
8/4/2016	LP	Started GWTS system.
8/7/2016	LP	Collected stormwater samples.
8/9/2016	LP	Moved sand filter manifold and new bag filters into GWTS building.
8/10/2016	LP	Electrician on site to install LED lighting in former WWTS building.
8/15/2016	LP	Bailed J-23.43R. Started maintenance on Drip Pad cover (added sand to cover).
8/16/2016	LP	Pumped Sump 23, continued maintenance of Drip Pad cover (adding sand).
8/17-19/2016	LP	Continued maintenance on Drip Pad cover.
8/22/2016	LP	Repaired process pump in GWTS.

DATE	INITIALS	DESCRIPTION OF TASK
9/2/2016	LP	Pumped leachate: Tank #5 350 gallons, Tank #7a 0, Tank 7b 450 gallons.
9/6/2016	LP	Bailed J-23.43R.
9/8/2016	LP	Pumped Sump 23.
9/12/2016	LP	Repaired GWTS (new cord and breaker). Began collecting water level and total depth measurements for annual sampling event.
9/13/2016	LP	Completed collecting water level and total depth measurements for annual sampling event.
9/14/2016	LP	Re-labeled all wells.
9/15/2017	LP	Packed and shipped groundwater samples. Re-started GWTS.
9/22/2016	LP	Pumped leachate: Tank #5 650 gallons, Tank #7a 125 gallons, Tank #7b 775 gallons
9/30/2016	LP	Attended fork lift safety class.

DATE	INITIALS	DESCRIPTION OF TASK
10/3/2016	LP	Preparations for carbon change-out in GAC units.
10/4/2016	LP	Put spent carbon on decon pad to drain, cover and secure.
10/5/2016	LP	Disconnect GAC units and move to new location.
10/6/2016	LP	Move sand filters move to new location.
10/7/2016	LP	Inspect spiders and install new pluming to the GAC vessels.
10/10- 11/2016	LP	Drum spent carbon, label, and move to Haz Mat pad. Pull pump out of Sump 23 and rebuild.
10/13/2016	LP	Plumb in sand filters and GAC vessels. Filled GAC units with fresh carbon.
10/17/2016	LP	Started GWT system.
10/18/2017	LP	Pump from sump 23.
10/24/2016	LP	Bailed J-23.43R.
10/25/2016	LP	Pumped leachate containment pads, 400 gallons, Tank #5 650 gallons, Tank #7a 125 gallons, Tank #7b 600 gallons.
10/27/2016	LP	Shipped carbon drums and contaminated debris off site for disposal. Fixed pump for Sump 23.
10/28/2016	LP	Pumped Sump 23, 600 gallons.

DATE	INITIALS	DESCRIPTION OF TASK
11/1-2/2016	LP	Pressure washed and painted GWTS floor.
11/3-11/2016	LP	Worked on upgrade of GWTS.
11/14/2016	LP	Prepared for well abandonment activities. Rebuilt and installed Sump 23 pump.
11/17/2017	LP	Performed Leachate Tank integrity tests.
11/18/2016	LP	Pumped leachate, Tank #5 600 gallons, Tank #7a 250 gallons, Tank #7b 725 gallons.
11/21/2016	LP	Performed Landfarm #7 inspection
11/22/2016	LP	Performed Landfarm #5 inspection.
11/23/2016	LP	Bailed J-23.43R.
11/28/2016	LP	Set up composite sampler for quarterly GWTS samples.
11/29/2016	LP	Collected quarterly GWTS samples. Collected chip samples of concrete slabs for disposal characterization.
11/30/2016	LP	Pumped Sump 23, 650 gallons.

<u> </u>	T	T
DATE	INITIALS	DESCRIPTION OF TASK
12/1/2016	LP	Fixed leak on LSR-8R and cleaned meter.
12/7/2016	LP	Checked pumping well heads and adjusted flow.
12/12/2016	LP	Bailed J-23.43R.
12/13/2016	LP	Pumped leachate, Tank #5 650 gallons, Tank #7a 500 gallons, Tank #7b 800 gallons.
12/22/2016	LP	Pumped Sump 23.

Appendix L Well Plugging Records



Jeremish W. (Jay) Nixon, Governor . Harry D. Bozoian Director

DEPARTMENT OF NATURAL RESOURCES

darmo.gov

P.O. Box 250, Rolla, MO 65402-0250 (573) 368-2165 FAX(573) 368-2317

file(PCD3) December 07, 2016

INTERNATIONAL PAPER COMPANY 6400 POPLAR AVENUE MEMPHIS, TN 38197

Re: 00523389

OFFICIAL DOCUMENT

Congratulations! This confirms that your well abandonment information has been reviewed and registered by the Missouri Department of Natural Resources, Missouri Geological Survey.

This letter may be needed in the future as proof of Registration, verifying that your well was plugged in accordance with the Missouri Well Construction rules.

If you have questions regarding this letter please contact the Wellhead Protection Section at 573-368-2165.

Your Well Registration Number: B045759

Well Number: J 01.27R

Reference Number: 00523389

Site Name: INTERNATIONAL PAPER TREATED WOOD PRODUCTS

Site Address: 2609 S RANGELINE ROAD

Site City: JOPLIN



MISSOURI DEPARTMENT OF NATURAL RESOURCES GEOLOGICAL SURVEY PROGRAM

MONITORING WELL/TEST HOLE PLUGGING REGISTRATION RECORD

FOR OFFICE US	E ONLY
REF NO.	DATE RECEIVED
CR NO.	CHECK NO.

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OWNER AND S	ITE IN	FORMA	TION			1						·	<u> </u>			
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Latitude 37	• <u>03</u>	' _5	6.83	COUN	ſΥ					1/4		1/2	4 NW	1/4		
Longitude 94	. 28	2	1.55	Jasp	er				18			27	32			
MONITORING V	SITE INFORMATION STAME WHERE WELL IS LOCATED PAPER COMPANY WARRING ADDRESS AVENUE Memphis TIN 38197 SECONDERLY WHERE WELL IS LOCATED GIFY TIN 38197 SECONDERLY WHERE WELL IS LOCATED GIFY TIN 38197 SECONDERLY WHERE WELL IS LOCATED GIFY TIN 38197 SECONDERLY WHERE WELL IS LOCATED GONREPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 CICIRA MURE PREASE PRINT: PERMIT NUMBER CELERALIP PROJECT FORMATION O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER OR REGULATORY SITE ID NUMBER (IF ISSUED) 5681 SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MARK PLASSES PRINT SECTION DESS AND LOCATED O04584M DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MONITORING WELL/BOIL DESS AND SECRET O0560/20/2006 DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MONITORING WELL/BOIL DESS AND SECRET O0560/20/2006 DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MONITORING WELL/BOIL DESS AND SECRET O0560/20/2006 DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MONITORING WELL/BOIL DESS AND SECRET O0560/20/2006 DOWNEPA PROJECT NUMBER (IF ISSUED) FORMATION IN MONITORING WELL/BOILD BOILD OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF CALLDON OF C															
DATE WELL PLUGGED								DATI	ORIGIN	ALLY DRILL	.ED	REFERENCE	F NUMBER (IF	WELL NUMBER		
11/14/2016			vis - C	001104M				(IF K	NOWN)			KNOWN)				
		ATER	AND S	CREEN	AND SCREEN	RISER			N	PUMP OF EQUIPME	R SAMI NT RE	PLING EMOVED	CASING REMOV	/ED		
π.			<u> </u>	11,				Z No		Yes		Z N/A	☑ Yes □	No 🗆 N/A		
	ONITO			···					1							
Quantity						•				TOTA	AL NUI	WBER OF WEL	LS/BORINGS			
										AVE	RAGE	DEPTH OF ALL	. WELLS/BORING	9S		
									···	DATE	FIRS	T WELL/BORIN	NG WAS PLUGGE	ED .		
											DATE LAST WELL/BORING WAS PLUGGED					
																
DATE TEST HOLE PLUC	SGED	ĺ	EPTH (OF PLUG			LENGTH OF S	URFACE	PLUG	AMOUNT	OF FIL	_L	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	CASING REMOVED		
			Bottom_	ft. To)ft.				ft		Tons	or	Cubic Yards	☑ Yes ☐ No		
PLUGGING INFO	ORMA	TION														
WELL REMOVED BY EXCAVATION						_	!	UMBER	OF SACK	s						
T Yes									, nzen	ED 1 WATER USED			PER SACK			
No No	[Z] Tremi □ Press	e ure				s	lurry !	BS PER	BACK -	94	_	8		□ No		
FINISHED SURFACE MATERIAL			DRIL	LER NOTES								-,				
Asphalt Concrete		÷	PV	C casing br	oke 10' bek	ow gr	ound whi	le atte	mpting	to pull o	casin	g & Grout	. Pumped c	ement grout		
☐ Concrete ☐ Soil ☐ Other	'	tir	. wit	h 5% bento	nite to 2' be	low g	round sui	face. I	Remov	e pad &	COVE	er. Backfill	ed upper 2'	with soil.		
					d was plugge	ed in a	ccordance	with th	e Depa	rtment of	Natu	ral Resourc	ces requireme	ents.		
MONITORING WELL INS	TALLATIC	ON CONTR	ACTOR				,			PERMI	T NUM	BER	DATE			
Darn	<u> </u>					003	3520	M	11/14/2	11/14/2016						
MONITORING WELL MIS	TALLATIC	ON CONTR	ACTOR	APPRENTICE (IF	APPLICABLE)					PERMI	TNUM	IBER	DATE			
MO-780-2181 (3-16) S	You			-w		•				i i	309N	1	11/14/2	016		

(3-16) SEND COMPLETED FORM ALONG WITH \$50 REGISTRATION FEE TO: MISSOURI DEPARTMENT OF NATURAL RESOURCES, MISSOURI GEOLOGICAL SURVEY, WELLHEAD PROTECTION SECTION, PO BOX 250, ROLLA, MO 55402 PHONE: 573-368-2165 FAX: 5673-368-2317 EMAIL: welldrilets@dnr.mo.gov SUBMIT RECORD AND FEE WITHIN 60 DAYS AFTER WELL PLUGGING OR WITHIN 180 DAYS AFTER THE PLUGGING OF TEMPORARY WELLS RECORD (AND FEE) MAY BE SUBMITTED ONLINE: dnr.mo.gov/mowells

dar.mo.gov

P.O. Box 250, Rolla, MO 65402-0250 (573) 368-2165 FAX(573) 368-2317

file(PCD3) December 07, 2016

INTERNATIONAL PAPER COMPANY 6400 POPLAR AVENUE MEMPHIS, TN 38197

Re: 00523390

OFFICIAL DOCUMENT

Congratulations! This confirms that your well abandonment information has been reviewed and registered by the Missouri Department of Natural Resources, Missouri Geological Survey.

This letter may be needed in the future as proof of Registration, verifying that your well was plugged in accordance with the Missouri Well Construction rules.

If you have questions regarding this letter please contact the Wellhead Protection Section at 573-368-2165.

Your Well Registration Number: B045760

Well Number: J 39.18

Reference Number: 00523390

Site Name: INTERNATIONAL PAPER TREATED WOOD PRODUCTS

Site Address: 2609 S RANGELINE ROAD

Site City: JOPLIN

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7	

MISSOURI DEPARTMENT OF NATURAL RESOURCES GEOLOGICAL SURVEY PROGRAM

MONITORING WELL/TEST HOLE PLUGGING REGISTRATION RECORD

	FOR OFFICE USE ONL	Y
ı	REF NO.	DATE RECEIVED
i		
	CR NO.	CHECK NO.
i		

E S	REGIS	TRA	ΓΙΟΝ	RECOR	D				CR NO				CH	IECK NO.		
ROUTE		APF	ROVED		DATE		ENTERED		STATE (CERT NO	Э.		REV	ENUE NO.		
OWNER AND S	ITE IN	ORMA	TION	v		<u>i</u>							1	-		
PROPERTY OWNER NA International Pa				ATED								RY PHONE N 659-621		ER WITH AF	EA CODE	
PROPERTY OWNER MA		DRESS				CITY Mei	mphis				STATE TN		- 1	38197		
2609 S. Rangel	ine Roa	ad	RE WE	LL IS LOCATED						- 1	city Joplii	n				
NAME OF SITE OR CLE International Pa			lood I	Products	DNRÆPA PR	OJECT	NUMBER OR R	GULATOR	Y SITE I	NUMB	ER (IF A	PPLICABLE		ARIANCE N 5681	UMBER (IF ISSUED	
PRIMARY CONTRACTO Kent Davis - Ea		•		, Inc.			PERMIT NUMB 004584M	R	<u>}</u> 1	to comp	y with	07(3), RSM all rules a ections 256	nd re	gulations p	rimary contractor romulgated RSMo.	
LOCATION INFO	ORMA	TION														
Lautude	· <u>03</u>		54.7 <u>5</u>	COUN	ПΥ					_ 1⁄4	_	1	4	NW	_ 1/4	
Longitude 94	. 28		17.97	Jas	per			Section	18	Town	ship _2	27N	Rang		□E ØW	
MONITORING V								T=								
11/14/2016	1	VINNE		(IF KNOWN)				01/12/	/N)	Y DRILL		REFERENC KNOWN)	E NUI	`	VELL NUMBER J-39.18	
10	STATIC W		LENG AND	STH OF RISER SCREEN	DIAMETER OF AND SCREEN	RISER	REMOVED		EC	JMP OR QUIPME	NT REM	OVED	CASI	ING REMOV	ED	
TEMPORARY M	ONITO	fi.		- 11.	2 PING INFOR	in.		No	[Yes	□ No	☑ N/A		Yes	N/A	
Quantity		Depth			ameter		Total Depth (Linear Fe	eet)	TOTA	LNUME	BER OF WEL	LLS/B0	ORINGS		
		Bori	ng (ft.))	(in.)				r Borings							
								-		AVER	AGE DI	EPTH OF AL	L WE	LLS/BORING	S	
										DATE	FIRST	WELL/BORI	NG W	AS PLUGGE	D	
										DATE LAST WELL/BORING WAS PLUGGED						
						<u> </u>				<u> </u>						
DATE TEST HOLE PLUG	GED		DEPTH	OF PLUG			LENGTH OF SU	RFACE PLL	IG AN	OUNT (OF FILL	•			CASING REMOVE	
			Bottom	ft. T	opft.			ft.			Tons	or	Cu	bic Yards	☑ Yes ☐ No	
PLUGGING INFO	GROUT	NSTALLA	TION	GROUT MATER			NU	MBER OF S	ACKS	· · ·	INU	MBER OF G	ALLO	NS OF	GROUT HYDRATE	
EXCAVATION 13 Yes 20 No	METHOD Gravit	y		CEMENT Type !	BENTONIT Chips Pellets	OF GROUT USED 1 Granular B Slurry LBS PER SACK 94			WATER USED PER SA					TO SATURATION 1 Yes		
FINISHED SURFACE	☐ Press	ure	loou	LLER NOTES	Other										in No	
MATERIAL	MATERIA		1			اسماد.	franc ballan		4- OLL						. =0/	
☐ Asphalt ☐ Concrete ☑ Soil ☐ Other	t	ìi			casing, grout, Removed											
Inereby certify that	the mo	nitoring	well h	erein describ	ed was plugge	ed in a	accordance v	ith the D	epartm	ent of	Natur	al Resour	ces i	requireme	ents.	
NON TORING WELL INS										PERMI				DATE		
Dary	W	ht	<u> </u>					••••			520N			11/14/2	016	
MONITORING WELL	ALLATIC	ON CONTR	KACTOR	R APPRENTICE	IF APPLICABLE)					PERMIT		ER	ľ	DATE		
MO-780-2161 (3-16) 8	END COM	PLETED	FORM A	ALONG WITH \$50	REGISTRATION	FFF TI	O. MISSOURI D	DADTMEN	T OE NA	0063		DOES MISS	20110	11/14/20		

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